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ELEVENTH
ANNUAL REPORT
OF THE
STATE INSPECTOR OF COAL MINES

1923

DENVER, COLORADO
EAMES BROTHERS, PRINTERS
1924

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PERSONNEL OF COAL MINE INSPECTION DEPARTMENT

James Dalrymple, Chief Inspector	Denver, Colo.
W. M. Laurie, Deputy Inspector	Trinidad, Colo.
Hugo H. Machin, Deputy Inspector	Aguilar, Colo.
William H. James, Deputy Inspector	Walsenburg, Colo.
James W. Graham, Deputy Inspector	Lafayette, Colo.
Henry P. King, Deputy Inspector	Denver, Colo.
Ada R. Tibbits, Chief Clerk	Denver, Colo.
Max M. Greenwald, Assistant Clerk	Denver, Colo.

FIELD FORCE AND DISTRICTS

W. M. Laurie, 512 Ash St., Trinidad, Colo. .... District No. 1
Includes the following mines: Primero, Frederick, Sopris, Starkville, Morley, Engleville, Gray Creek, Boncarbo, Piedmont, La Belle, Jeffryes, Santa Fe, Bear Canon, Three Pine, Thor, Macoye, Baldy Mountain, Hines, Keystone, Leone, Henderson, Deep Vein, Liberty, Fisher's Peak, Pickford, Beshoar, Brown, Phillips, Star, Prospect, Toller, Forbes.

Hugo H. Machin, Box 334, Aguilar, Colo. .... District No. 2
Includes the following mines: Lester, Ludlow, Rouse, Black Diamond, Rugby, Primrose, Star, Rapson, Southwestern, Jewel, Empire, Royal, Pryor, Cameron, Ravenwood, Ideal, Caprock, Hezron, Bunker Hill, Delagua, Cass, Tabasco, Greenville, Black Diamond, Berwind, Mutual, Brodhead.

Wm. H. James, 216 E. Indiana Ave., Walsenburg, Colo. District No. 3
Includes the following mines: Oakdale, Reliance, Caddell, Cuchara Canon, Toltec, Pictou, Jobal, Maitland, New Maitland, Vesta, Gordon, Turner, Sunnyside, Kebler Nos. 1 and 2, Walsen, Robinson 1 and 2, and all mines in Fremont county.

James W. Graham, Lafayette, Colo. .... District No. 4
Includes mines in the following counties: Adams, Boulder, El Paso, Jackson, Garfield, Gunnison, Mesa, Montrose, Ouray, Pitkin, and Rio Blanco.

Henry P. King, 1255 Lafayette St., Denver, Colo. .... District No. 5
Includes mines in the following counties: Archuleta, Elbert, Jefferson, La Plata, Moffat, Montezuma, Routt, and Weld.

UNION CARBIDE

For Miners Lamps

World's Best Quality----Highest Gas Yield

The product of the originators and developers of the Carbide and Acetylene industry.

Uniform, sustained quality assured by more than a quarter of a century of experience in selecting raw materials, and in perfecting laboratory practice and works processes.

The constant, dependable quality compels recognition of the economies which go with it.

Union Carbide will keep for years in the original package without deterioration.

UNION CARBIDE
PACKED IN
BLUE AND GRAY DRUMS
CAPACITY 100 LBS.

Our remarkable nation-wide service and distributing system makes Union Carbide quickly available everywhere.

Miners Lamp Union Carbide is specially prepared for miners' use.

Because of its high gas yield, lamps require less Carbide per charge.

Uniform in size, and carefully screened: this eliminates waste and produces uniform generation of gas.

Due to the great purity of Union Carbide and its gas, the flame is of maximum illuminating power, and constant in size.

Our excellent approved package—the Blue and Gray Drum—is in keeping with our determination to faithfully protect the interests of the operator and the miner in the matter of Carbide quality, from the time the Carbide is packed at the works until it is consumed by the miner.

We have Union Carbide Warehouses in 175 cities.

UNION CARBIDE

Maximum Quality and Exceptional Service

have been developed to maintain the many money-saving and efficiency producing advantages realized by Operators and Miners through the use of Carbide lamps.

Carbide Lamp Advantages

Low cost of lamp.

Remarkably low cost of upkeep.

Long life of lamp.

Light in weight—Does not handicap miner.

Lamp very compact — No burdensome entanglements. Because of the widely diffused light, miner can easily observe conditions relating to the personal safety of himself and fellow miners. A wonderful aid to mine foremen in getting efficient and economical results.

The Carbide Lamp is easily understood and easily cared for by every miner.

Miner can always assume the posture—standing, bending or kneeling—which will enable him to work with greatest comfort, and light is always directed just where he needs it.

Greater volume of light than from any other type of mine lamp.

Minimizes number of accidents resulting from poor lights.

Working places can be more easily and thoroughly inspected, and dangerous roof, wall and floor conditions detected with greater certainty.

No eye strain when Carbide lamps are used. Eye-strain means loss of general efficiency.

Carbide Lamp can always be used as convenient Hand Lamp, or can be hung up.

Size of flame and volume of light easily regulated.

Carbide Lamps, used in and about mines, have accomplished more for the comfort and convenience of miners than any other development, invention or device of the twentieth century. Union Carbide Gas light is more nearly like the natural light of the sun than any other light known to man. The miner can accomplish more and better work, with greater ease, comfort and safety, than would otherwise be possible.

Our Blue and Gray Drum is, throughout the world, recognized as a symbol denoting:

Best Grade Carbide
Highest Gas Value
Uniform Dependable Quality
Purest Gas

UNION CARBIDE SALES COMPANY

Principal Offices

Peoples Gas Bldg.,
Chicago, Ill.

Carbide and Carbon Bldg.,
New York, N. Y.

Balfour Bldg.,
San Francisco, Calif.

LETTER OF TRANSMITTAL

Denver, Colorado, April 1, 1924.

To His Excellency,
WILLIAM E. SWEET,
Governor of Colorado.

Sir: Herewith I have the honor to submit to you, in accordance with Section 37 of an Act entitled "Coal Mining Laws," the Eleventh Annual Report of this department.

The period covered began January 1 and ended December 31, 1923.

Respectfully,

JAMES DALRYMPLE,
State Inspector of Coal Mines.

STATEMENT SHOWING RECEIPTS AND DISBURSEMENTS FROM JANUARY 1, TO DECEMBER 31, 1923

RECEIPTS

Tax collected on coal mined	$33,178.34	
From sales of copies of the Coal Mining Laws	435.35	
Refunds	12.50	
Balance brought forward from 1922	4,391.95	
Total		$38,017.58

DISBURSEMENTS

Salary of Chief Inspector	$ 4,399.99	
Salary of five deputy inspectors	14,529.43	
Salaries of chief clerk and assistant clerk	3,300.00	
Expenses, chief and deputy inspectors	4,829.91	
Fatal accident investigators, per diem and expenses	141.70	
Mileage books (R. R. Transportation)	1,020.00	
Automobile supplies and repairs	951.94	
Board of Examiners, per diem and expenses	737.98	
Printing	2,176.27	
Postage	413.97	
Stationery supplies	236.15	
Telephone service	97.45	
Telegraph service	26.09	
Instruments	79.97	
Express	2.39	
Miscellaneous	113.43	
Total		$33,056.67
Surplus December 31, 1923		$ 4,960.91

FIELD EQUIPMENT

One Hupmobile Roadster Coupe
Three Dodge Touring Cars
One Ford Touring Car
Seven Anemometers
One Psychrometer
One Geophone

Five Speedometers
One Carbon Monoxide Gas Detector
Five Marseant Safety Lamps
Ten Koehler Safety Lamps
One Anerold Barometer
One Burrell Gas Detector

One Gas Testing Box

SUMMARY OF THE COAL PRODUCTION OF COLORADO, 1923

*Number of mines operated	276
Number of new and old mines opened	32
Number of mines closed 18; abandoned 2; total	20
Tons of sub-bituminous coal produced	2,787,414
Tons of semi-bituminous coal produced	851,929
Tons of bituminous coal produced	6,569,275
Tons of semi-anthracite coal produced	73,541
Tons of anthracite coal produced	54,576
Total number of tons of coal produced	10,336,735
Increase, 1923	333,125
Tons of run of mine coal produced	3,248,223
Tons of lump coal produced	3,118,073
Tons of nut coal produced	861,490
Tons of pea coal produced	56,126
Tons of slack coal produced	3,052,823
Percentage of slack produced	43+
Tons of coal mined by hand	5,493,066
Tons of coal mined by machine	4,843,669
Kind and number of machines used: Compressed air 169; Electric 297; total	466
Tons of coal mined for shipment	8,594,418
Tons of coal shipped out of the state	2,128,594
Tons of coal sold to local trade and used by employees	436,335
Tons of coal used at the mines for steam and heat	237,628
Tons of coal made into coke	1,068,354
Tons of coke made	648,851
Number of days coke ovens were operated	340.5
Number of coke ovens used	545
Number of men employed at coke ovens	246
Number of miners employed: Pick 4,932; Machine 3,499; total	8,431
Number of men employed in and about mines (average)	13,277
Number of employees foreign born	5,401
Number of employees speaking English	12,326
Average number of days worked (man days)	169.9
Daily production per miner	7.2
Annual production per miner	1,226
Number and type of safety lamps used: Flame 854; Electric 5,902; total	6,766
Number of carbide lamps used	6,824
Number of pounds of carbide used (approximately)	196,985
Number of pounds of permissible powder used	865,633
Number of pounds of black powder used	1,610,164
Number of pounds of dynamite powder used	35,409
Number of men killed: Underground 63; Surface 3; total	66
Number of men injured	1,679
Number of men killed per thousand employed	4.97
Number of men injured per thousand employed	126.46
Number of tons of coal produced for each life lost	156,617
Number of men killed per million tons of coal produced	6.38
Number of men injured per million tons of coal produced	162.43
Number of tons of coal produced for each non-fatal accident	6,156
Number of men employed per fatal accident	201.2
Number of men employed per non-fatal accident	7.9
Number of widows left	45
Number of children left fatherless	119
Cost of development work in mines during 1923, 138 mines reporting	$1,011,859.00
Number of days lost account of car shortage, 47 mines reporting	2,153
Number of tons of coal lost through shortage of labor, 10 mines reporting	50,173

---

*NOTE: The yearly reports of eleven of the above 276 mines were filed too late to embody their combined production of 2,947 tons in the tables of this Annual Report. However, they are included in the Mine Directory or Table No. 1.

THE ROYAL FUEL COMPANY

Producers of High Grade
BITUMINOUS

COAL

Certificate U. S. Bureau of Mines gives B. T. U. 13,596

Royal Coal has given satisfaction at Fort D. A. Russell, Fort Logan, Fort Bliss, Fort Huachuca and Fort Riley. *The ROYAL Mine has two million tons of coal blocked out*

GENERAL OFFICE
DENVER, COLORADO

Modesty in Claims

is oftentimes commended. It is right that it should be. Frequently, however, we feel that we are not "hitting on all six" when we don't claim more for Hyatt mine car bearings that we usually do.

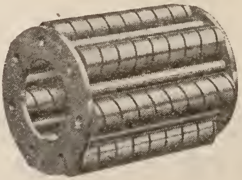
Recently a certain mining company re-equipped an entire mine with 250 cars having Hyatt bearings in the wheel hubs. As a result, four men (two repair-men and two greasers) have been laid off—saving $30.00 per day in wages. About 25 gallons of black scrap have been saved every working day, and more coal is produced than ever before.

At this rate, the Hyatt bearings will have saved enough in about twelve to fifteen months to balance their initial cost, and ever after that, during their many years of life, the savings will be clear profit for dividends or other uses.

The bearings will require no attention other than a gun full of grease every three or four months, and "if they are properly greased, why shouldn't they last for from fifteen to twenty years?"

We shall be glad to give you further details if you will let us know you are interested.

HYATT ROLLER BEARING COMPANY
NEWARK, HUNTINGTON, PITTSBURGH, CHICAGO
WORCESTER, BUFFALO, PHILADELPHIA, CLEVELAND,
INDIANAPOLIS, DETROIT, MILWAUKEE,
MINNEAPOLIS, SAN FRANCISCO



Eleventh Annual Report
OF THE
State Inspector of Coal Mines
1923

INTRODUCTION

The Eleventh Annual Report of the Coal Mine Inspection Department is herewith submitted to those who are interested in the industry.

The total production of Colorado for the calendar year 1923 was 10,336,735 tons, an increase of 333,125 tons as compared with the previous year. The average number of men employed in and about the mines was 13,277, or 159 men less than in 1922, and 169.9 man days were worked, a loss of 26.6 days compared with the former year. In the various tables compiled in this report, the operations of 265 mines are shown, in fact, however, 276 mines filed their annual reports, but eleven of them were too late to be embodied in the tables outside of "Table No. 1," which is the "Mine Directory."

Out of the 276 mines reported, 141 are mines which have no railroad connections, they are widely scattered over the State and usually in isolated places. They are operated intermittently and mostly in the early winter to supply a small local trade. When this is satisfied, they close and the short time operators generally move to other fields. These mines, sometimes, remain idle for several years and then reopen under other names and it is very difficult to keep track of them, and it is almost impossible to get data from them. When the District Inspector accidentally hears of such a mine, it is usually so far from a railroad and therefore quite an expense to visit it, or, if practicable does visit it, finds it closed and no one on the ground who knows a thing about the mine. These mines are quite a problem to the Department, as they are generally handled by men who are unfamiliar with coal mining and it has happened that accidents occurred that were not reported and information of them reached the Department in a round about way, long after they occurred. When the Inspector went to investigate, found the mine closed, the operator gone, and the only data that could be obtained was that a man was killed.

Fortunately this is not true of all the small mines off the railroads. Many of them are steady producers, comply with the law, employ proper mine officials, and report regularly year in and year out. These mines are necessary in the district in which they operate, serving a utilitarian purpose as well as a commercial end.

There were two mine disasters, the Southwestern mine explosion, in which ten men lost their lives, and the Midwest mine explosion, in which six lives were lost, bringing the total of lives lost to 66, or 4.97 per thousand men employed, a slight decrease compared with 74 lives lost, or 5.5 per thousand employed in 1922. The non-fatal accidents numbered 1,679, or 126.46 per thousand employed, and is a decrease of 45 injured, or 1.9 per thousand employed, than in the preceding year.

There were no labor troubles and, excepting in Routt county, very little car shortage. However, the increase is due less to a brisk demand for the product than to the absence of labor trouble and car shortage. In Routt county the car shortage has become an established institution and is a great loss to the operation of coal there, as the product of this county is in great demand in Nebraska. Considering the number of large properties operating, it cannot be said that business was good. It is true the production was about normal, but with a greater radius for distribution, the result would have been different.

It is astonishing to note that no matter how dull the outlook to sell coal is, the Colorado operator keeps up his courage and invests large sums of money annually to improve his mines. It would take pages to enumerate all the up-to-date machinery that has been installed in the past year and the work done to improve the underground conditions and safeguard life, besides to make living conditions better for the families in the various camps.

The reader will notice an innovation in this report, that is the insertion of advertising matter. This was done to lessen the cost of printing the Annual Report, which is considerable. We hope the advertisers will meet with some returns from their investments, and that the operators, when in need of the wares advertised, give them an opportunity to present to them the qualities and prices of materials before going elsewhere. In short, we bespeak the good will of the operators for the advertisers of the Eleventh Annual Report.

The automobiles used by the Deputy State Inspectors of Coal Mines have been in use nearly four years, are in bad condition and continually needing repairs. We have not the money to buy new ones and unless provisions are made by the next legislature, either by appropriation or increase of coal tax so that new automobiles can be provided, the inspection of mines is going to be seriously handicapped.

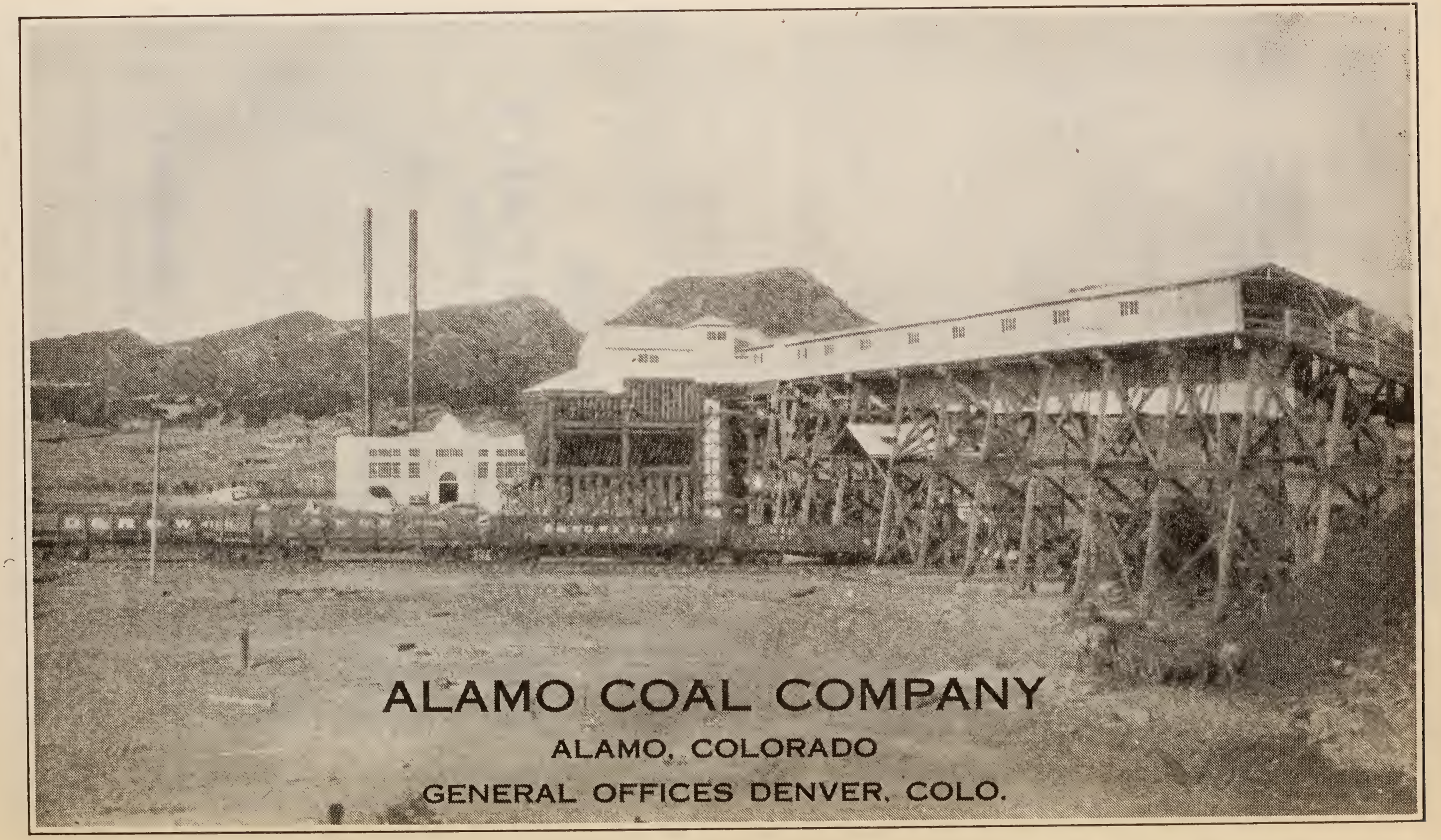
I desire to express my appreciation for the co-operation given by the operators in general in trying to make the coal mines more safe, and also to the employes of the Department for their able assistance and loyalty.

Total Inspections made in 1923	801
Total Producing Mines	276
Number of Fatal Accidents Investigated by Inspectors and Special Investigators	50
Number of Inquests Attended by Inspectors and Special Investigators	41
Scale Inspections	3
Complaints Investigated	19
Prosecutions	14
Miles Traveled by Auto	45,497
Miles Traveled by Railroad	21,156

HERCULES
POWDER COMPANY
WILMINGTON, DELAWARE

Submit us your Blasting Problems; Coal and Metal Mining, Road Building, Quarry or Agricultural Blasting. We have Explosives for economical use in every operation. We carry a complete stock of Dynamite, Black Blasting Powder, Fuse, Caps and Blasting Supplies in our Denver-Littleton Colorado Magazines, insuring prompt shipment of all orders received.

Address
HERCULES POWDER COMPANY
GEORGE T. KEARNS, MANAGER
1822 California Street Denver, Colorado


ALAMO COAL COMPANY
ALAMO, COLORADO
GENERAL OFFICES DENVER, COLO.

NEW MINES

Six new mines were opened up during the year. At the request of the department Mr. Nash of the Alamo Coal Co. wrote the following interesting description of this large mine with its up-to-date equipment and model camp.

Alamo Mine, Alamo Coal Co. Post Office,
Alamo, Huerfano County.

Drilling was begun late in 1921, resulting in a $6\frac{1}{2}$-foot upper vein and an 11-foot lower vein being encountered. Actual development work was started in the Fall of 1922—a temporary electric and compressor plant, also boarding and bunk houses, were erected—an air course and main slope, each 9x10 in the clear, were each driven 2,000 feet and completely timbered, in ten months' time, which is probably a record for the State. These slopes were driven in the Pierre shales for a distance of about 1,800 feet, then the Trinidad sandstone cut for a distance of 200 feet, at which point the Cameron vein, eleven (11) feet in tickness, was encountered. This Cameron vein is lying immediately over the Trinidad sandstone, and immediately above the vein is a sandstone roof.

During this period, four and one-half ($4\frac{1}{2}$) miles of main railroad and one and one-half ($1\frac{1}{2}$) miles of empty and load tracks were completed. This extension is built from Kebler No. 2, the then end of the Loma Branch, to our camp, Alamo. The extension is laid with 85-pound rail, and storage for fifty (50) empty cars and seventy-five (75) loaded cars has been installed.

A Howe 125-ton Steel Track Scale, set in cement, was installed for weighing the empty railroad cars above the tipple, and a Howe 150-ton Steel Track Scale, set in cement, was installed below the tipple for weighing the loaded railroad cars.

Forty (40) miners' houses, three and four rooms in size, have been constructed of cement brick. These are, without doubt, the most modern and attractive miners' houses erected in this State. The cement brick Office Building has been completed, as is the cement brick Power Plant. The architecture of all of these buildings conforms to the architecture of the famous ALAMO, at San Antonio, Texas.

The Power Plant installed is probably the most up-to-date and efficient machinery in this part of the country, comprising:

Two (2) 250-HP. Marine-Type Boilers.
Combustion Engineering Co.'s Type "E" Stokers.
Paige-Jones Water Softener.
Hot Water Heater.
Westinghouse 1,250-kva Turbine and Generator.
Wheeler Condenser.
A Spray Pond.
A Sturtevant Fan for the boilers.
A Traveling Crane for moving the heavy machinery.
Ash Conveyors.

The largest slope Hoist that has ever been installed in Colorado—built by the Wm. A. Box Iron Works Co., of Denver, and is operated by a 600-HP. Westinghouse Motor. The Hoist is equipped with a 1⅜-inch Langlay Plow Steel Rope, furnished by the American Steel & Wire Co.

It is expected that this will be a one-man power plant.

The tipple is built of Oregon Fir and the top enclosed in galvanized corrugated iron. In it are housed the screening plant, manufactured by the C. S. Card Iron Works, of Denver, consisting of their most modern Shaking and Revolving Screens, Rotary Dump, and Loading Booms for both Lump and Nut coal—these being the only Loading Booms installed in southern Colorado. The tipple has more clearance, not only as to height from the top of rail, but as to width between the bents, of any tipple that we know of. The track centers are 20 feet, and the clearance above rail a minimum of 18 feet. The tipple is also equipped with a Jeffrey Car Haul and a Richey Car Retarder and two Manierre Extension Box Car Loaders.

The Pit Cars were built by the C. S. Card Iron Works, and are tight bodies with 42-inch track gauge. These Pit Cars are dumped in a Card Rotary Dump, and all Motors used in the installation are Westinghouse. A large Steel Fan, built by the Vulcan Iron Works, of Denver, has been installed. The Main Slope is laid with 60-pound rail, and the entries with 30-pound rail—all of these being furnished by the Colorado Fuel & Iron Company.

A Well, 12 feet in diameter and 75 feet deep, was sunk in a dry arroyo adjacent to the power plant, where an inexhaustible underflow of excellent water was encountered. This water is pumped to a 100,000-gallon concrete reservoir, 6,000 feet from the well, at an elevation of about 500 feet above the well. A 4-inch pipe line was laid.

The main slope and air course are timbered with red spruce furnished by the Trinchera Timber Company.

The screen are so arranged that any size of coal can be made, with a capacity of 2,500 tons per day. Alamo coal is very bright in appearance—hard in texture—leaves very little ash, is practically sootless, and will not clinker. It is undoubtedly a high-grade Bituminous domestic coal.

The property was put into full operation on November 26th, 1923—the first car having been shipped on October 2d, 1923.

The Officers of the Company are as follows:

President, William B. Lewis, 40 Wall St., New York City.

Treasurer, H. H. Bizallion, President Gotham National Bank, New York City.

Vice-President, General Manager Sales, Purchasing Agent, H. F. Nash, 922 Gas & Electric Bldg., Denver, Colo.

Secretary, A. S. Pratt, 61 Broadway, New York City.

Assistant Secretary and Assistant Treasurer and Counsel, Geo. C. Manly, 521 Ernest & Cranmer Bldg., Denver, Colo.
General Manager Operations, E. H. McCleary, Alamo, Colo.
Auditor, A. G. Nelson, 922 Gas & Electric Bldg., Denver, Colo.

ALAMO is the postoffice and shipments can be routed either via the Denver & Rio Grande Western or the Colorado & Southern Railways, as Alamo is located on what is known as the "joint track."

Compensation insurance is carried in the Employers' Mutual Insurance Company, of Denver.

Written by H. F. NASH.

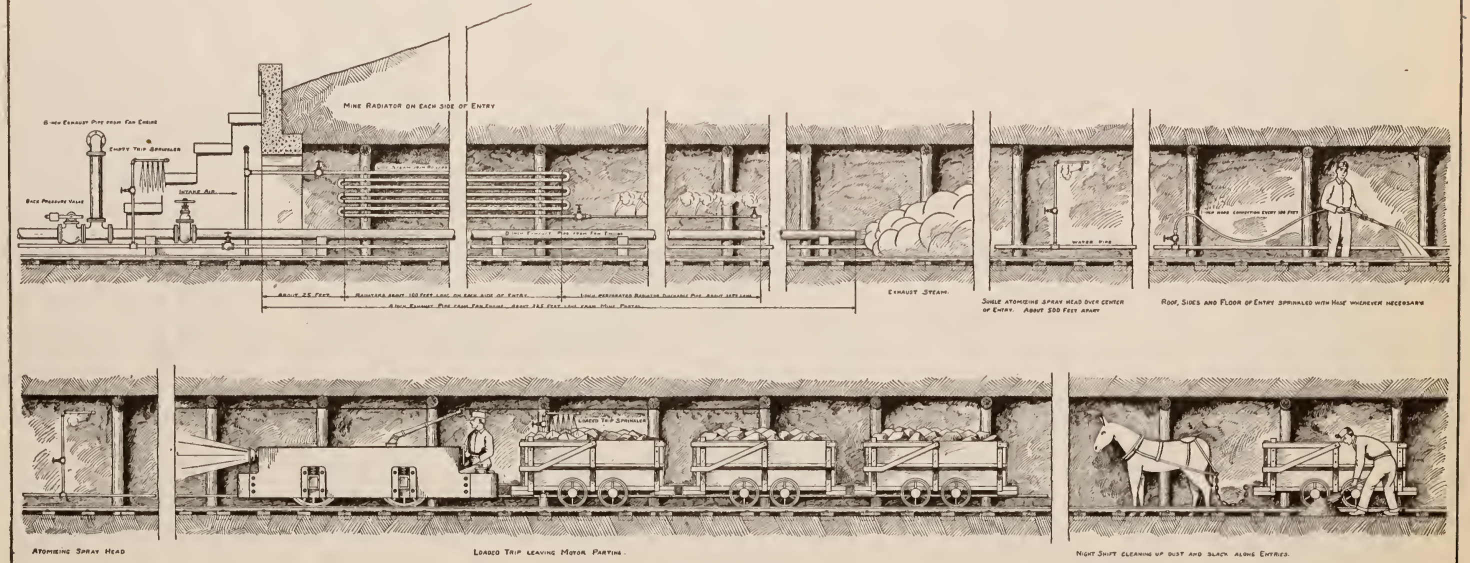
MOHAWK MINE, Black Hawk Coal Co., Post Office, Canon City, Fremont county, with J. J. Wolfersberger as manager with offices in Denver. This property is a slope opening and the coal bed under exploitation is three feet and ten inches thick of the semi-bituminous variety. The mine has been equipped with a fan, tipple, scales, etc., which has cost to date Fifty Thousand Six Hundred Dollars. This mine has no railroad connection.

HAPPY CANON MINE, Happy Canon Coal Co., Post Office, Montrose, Montrose county, William Toniolli, manager. This mine is opened by a slope 165 feet in length and struck a coal bed two feet and six inches thick of the sub-bituminous variety. A Sturdevant Steel Pressure Blower fan, a steam hoist, boiler, and engine have been installed, a road constructed and a tipple built at an outlay of Twenty-six Thousand Six Hundred and Eighty Dollars. This mine has no railroad connection.

OLIVER MINE, Oliver Coal Co., Post Office, Somerset, Gunnison county, Clint L. Oliver, Kansas City, Mo., manager. This mine has a slope opening of 250 feet and a drift opening 400 feet. The coal bed under operation is from 21 to 22 feet thick and of the semi-anthracite variety. So far about Eight Thousand Dollars have been expended for its development and equipment. No railroad connection at this mine.

MASCOT MINE, C. E. Williamson, Post Office, Matheson, Elbert county. This mine has a slope opening about 328 feet in length and the coal to be mined is from 3 to 5 feet thick and of the sub-bituminous variety. This mine is equipped with steam boiler, hoisting engine, engine house, tipple house, scales, etc. The cost to date is Five Thousand Dollars. No railroad connection at this mine.

CRYSTAL MINE, Crystal River Coal & Coke Co., Post Office, Carbondale, Pitkin county, P. C. Coryell, Jr., manager. This mine is opened by a drift 135 feet in length and the coal bed under exploitation belongs to the Mesa Verde Group and is 4 feet thick and of the bituminous variety. A coal chute and blacksmith shop have been erected, a road constructed, and a bridge built across the Crystal River, and a spur to connect with the Crystal River and San Juan R. R. The total expense of this property, so far amounts to Three Thousand Five Hundred and Thirty-nine Dollars.



8-inch Exhaust Pipe from Fan Engine
Empty Trip Sprinkler
Back Pressure Valve
Intake Air
Mine Radiator on each side of Entry
Steam Jets
8-inch Exhaust Pipe from Fan Engine
About 25 Feet.
Radiators about 100 feet long on each side of Entry.
1-inch perforated Radiator Discharge Pipe About 10 Ft. Long
8-inch Exhaust Pipe from Fan Engine About 325 Feet long from Mine Portal.
Exhaust Steam.
Water Pipe
Single atomizing spray head over center of Entry. About 500 Feet apart
1-inch Hose Connection every 100 Feet
Roof, Sides and Floor of Entry sprinkled with Hose whenever necessary
Atomizing Spray Head
Loaded Trip Sprinkler
Loaded Trip leaving Motor Parting.
Night Shift cleaning up dust and slack along Entries.

THE COLORADO FUEL AND IRON COMPANY.

MINE HUMIDIFYING AND SPRINKLING SYSTEM.

CROSS SECTION ALONG MAIN SLOPE.

IMPROVEMENTS

The Colorado Fuel & Iron Company, some time ago, started putting signals on all fans at gaseous mines so that slowing down or stoppage of fans will cause a signal to operate, either by blowing whistle or ringing of bell, thereby informing someone in charge that something is wrong with the ventilating fan. They have also installed automatic releases at some of their mines that cut off the power all over the mine in case of slowing down or stoppage of fan. Both of these devices are operated by the ventilating pressure. The State Inspection Department has approved both of the devices and is recommending them to all gaseous mines. The State is also recommending Permissible Electric Head Lamps to take the place of open lights in all gaseous mines and non-gaseous mines connected with gaseous mines. Some of the mines have already complied with the recommendation, others are waiting upon the manufacturers of the lamps for delivery.

It is the desire of the State Inspection Department to have the mining law so amended by the next legislature that the use of open lights will be prohibited in all mines shipping coal by rail and in all other mines where the Chief Inspector believes the use of open lights a menace to life.

The air-shaft at Toller mine has been enlarged to the extent of doubling the area and retimbered in first class shape. A steam hoist has also been installed to hoist employes in case of necessity. Considerable repairs made to the main hoisting shaft head-frame Transformers and Marine Cable have been installed underground. The above work has been done in first class shape and certainly is a great improvement, especially from a safety standpoint.

HUMIDIFICATION AND SPRINKLING AS PRACTICED BY THE COLORADO FUEL AND IRON COMPANY

Necessity for Humidifying

While the annual rainfall in Las Animas county, which is that part of the State which my paper has to deal with, was 26.85 inches in 1923, the normal average yearly rainfall is only about 17 inches.

The moist warm air which leaves the Pacific Ocean headed in our direction, deposits its vapor in the mountains as rain and snow, and when it reaches us it is descending and its temperature increasing and is prepared to take up moisture rather than deposit it.

We must depend principally on the moisture in the winds from the Atlantic and the Gulf of Mexico.

Temperature and humidity readings taken at the surface at several of the Company's properties last month by Robert McAllister, the Company's Mine Inspector, are as follows:

Jan. 3—Temp. 37° Fah. Relative Humidity 53%.
Jan. 7—Temp. 40° Fah. Relative Humidity 43%.

Jan. 8—Temp. 39° Fah. Relative Humidity 21%.
Jan. 9—Temp. 36° Fah. Relative Humidity 60%.
Jan. 11—Temp. 37° Fah. Relative Humidity 46%.
Jan. 21—Temp. 35° Fah. Relative Humidity 83%.
Jan. 22—Temp. 44° Fah. Relative Humidity 30%.

The average temperature and humidity for the seven days being—Temperature 38° Fahrenheit, Humidity 48%, which contains about Two (2) gallons of water for 100,000 cubic feet of air.

Readings in the return air during the same periods are as follows:

Jan. 3—Temp. 65° Fah. Relative Humidity 100%.
Jan. 7—Temp. 62° Fah. Relative Humidity 100%.
Jan. 8—Temp. 61° Fah. Relative Humidity 100%.
Jan. 9—Temp. 65° Fah. Relative Humidity 100%.
Jan. 11—Temp. 65° Fah. Relative Humidity 100%.
Jan. 21—Temp. 66° Fah. Relative Humidity 100%.
Jan. 22—Temp. 60° Fah. Relative Humidity 100%.

Average Temp. 63° Fah. Relative Humidity 100%.

100,000 Cubic Feet of air at this temperature and humidity contains about Eleven (11) gallons of water.

Figuring on 100,000 Cubic Feet of air, which is about the average quantity at each of our mines, passing per minute, at the above conditions, would mean the extraction of about 13,000 gallons of water each Twenty-four (24) hours from the mine. If no vapor is applied artificially the under-saturated intake air must get its moisture from the dust on the walls, roof and floor of the mine, and the dryer the dust is, the more dangerous it is.

What we try to do is to heat the air to the required temperature at the mouth of the mine and give it all the moisture it can carry, before it proceeds on the way through the mine. In many cases it is raised to a temperature higher than the mean temperature of the mine, as its moisture is deposited on the walls, roof and floor. By the application of plenty of water under a strong pressure, on the roof, sides and roadways, moistening the dust so that it will adhere when pressed in the hand to make a ball, we believe it will not propagate an explosion.

By referring to the sketch you will note the system as practiced by The Colo. Fuel and Iron Company.

First—Preheating the Air to the Mine Temperature and Humidifying It.

Radiators of ONE and TWO inch pipe (FOUR (4) inches are sometimes used), are lined along each side of the intake aircourse. Coils are oftimes placed along the roof also, and are from 75 to 125 feet long, according to the amount of radiation desired, and are usually heated by live steam.

The exhaust steam from the fan is carried into the intake aircourse, preferably a short distance in, by the radiators, which supplies vapor to the air as well as assisting in raising its temperature. This is supplemented by fine sprays placed along the entry at intervals from 25 to 500 feet, as is found necessary.

Loading Up of Fine Slack and Dust Along the Roadways and Sprinkling

Different types of cars distribute more or less fine slack along the roadways, which is ground up by the traffic of men, mules and cars. This coal is loaded out at convenient times and the entire entry sprinkled by hose, with a pressure of 50 to 75 pounds. With valves every 125 feet, one man can sprinkle 4,500 feet of entry in an 8-hour shift.

The string of empty cars is thoroughly sprinkled by a heavy spray on each trip from the tipple, which prevents the dust from the cars being picked up by the air current or sifting out through the cracks onto the roadway. Each trip of loaded cars is likewise sprinkled when leaving the partings.

The average amount of water applied per day at each mine, exclusive of exhaust steam, is as follows:

7 Hours sprinkling by hose at 25 Gals. Per Min.	10,500
20 Fine Sprays working 4 hours per day at 3 G. P. M.	14,400
Water Sprayed on trips at partings	500
Total—Gallons	25,400

Our Company installed during 1922 over 72,000 feet of sprinkling lines of One (1), Two (2) and Four (4) inch size, in Seven (7) Coking Coal Mines in Las Animas County.

The extensions for the year 1923 were:

	20,980 feet	1-inch pipe
	27,279 feet	2-inch pipe
	120 feet	3-inch pipe
	5,665 feet	4-inch pipe
Besides—		
	1,749 feet	½-inch pipe
	1,444 feet	¾-inch pipe
Total	57,237 feet	

The cost of labor and supplies for Humidification and Sprinkling for the year 1923 at Seven (7) Plants totaled $34,400.00, or Two (2) Cents One (1) Mill ($.021) per ton of coal mined.

By R. L. HAIR,
Division Engineer,
Colorado Fuel & Iron Co.

In addition to the above sprinkling lines installed in the mines of the Colorado Fuel & Iron Co. in Las Animas county, a system of sprinkling was also installed in some of the mines in

Huerfano county at a cost of $9,573.94, making a total of $43,973.94 expended by the company during the year 1923. Extent of sprinkling lines in Huerfano county is as follows:

One-inch pipe	3,900 feet
Two-inch pipe	19,800 feet
Size not given	4,700 feet
Total installed	28,400 feet

VENTILATION AND SAFETY FEATURES PERFECTED BY INSTALLATION OF NEW FAN AND OTHER DEVICES AT THE ROYAL MINE

By H. Van Mater

The Royal coal mine at Aguilar, Colorado, was a great mine in 1921. It is a greater mine today, with ever-increasing reserves and the most advanced engineering features to be found in the West. A measurement of reserves actually blocked out in July, 1921, showed 1,982,268 tons, as then published in the Mineral Age. They now run well above the 2,100,000 ton mark.

In July, 1921, we published the following tabulation of the tonnage in the fifteen blocks of ground then producing as follows:

Block No.	Average Thickness	Tons of 2,000 lbs.
A	5.7	114,684
B	6.0	49,930
C	5.6	97,790
D	5.5	73,410
E	5.9	210,501
F	5.5	78,319
G	5.9	239,968
H	6.0	82,129
I	5.4	179,329
J	5.8	149,023
K	5.8	162,625
L	5.9	61,232
M	6.3	187,014
N	6.7	251,737
O	5.6	44,577
Total reserve tonnage in July, 1921		1,982,268

Although production has been going on at the rate of some 200,000 tons per year, development work has more than kept pace. The continuous driving of nineteen entries has added new reserves more rapidly than extraction has diminished them. In blocked out tonnage the Royal is now a record breaker.

Development work has been extended to several new blocks of ground since the above table was published, and although about 500,000 tons of coal have been mined in the past two and one-half years, the blocked out reserves are bigger and better than ever.

The following tables taken from reports of appraising engineers show the reserves now practically double what they were in 1918, when the Royal Fuel company of Denver undertook its aggressive program of development:

1918	1,190,113 tons
1919	1,282,205 tons
1920	1,606,399 tons
1921	1,982,268 tons
1923	2,100,000 tons

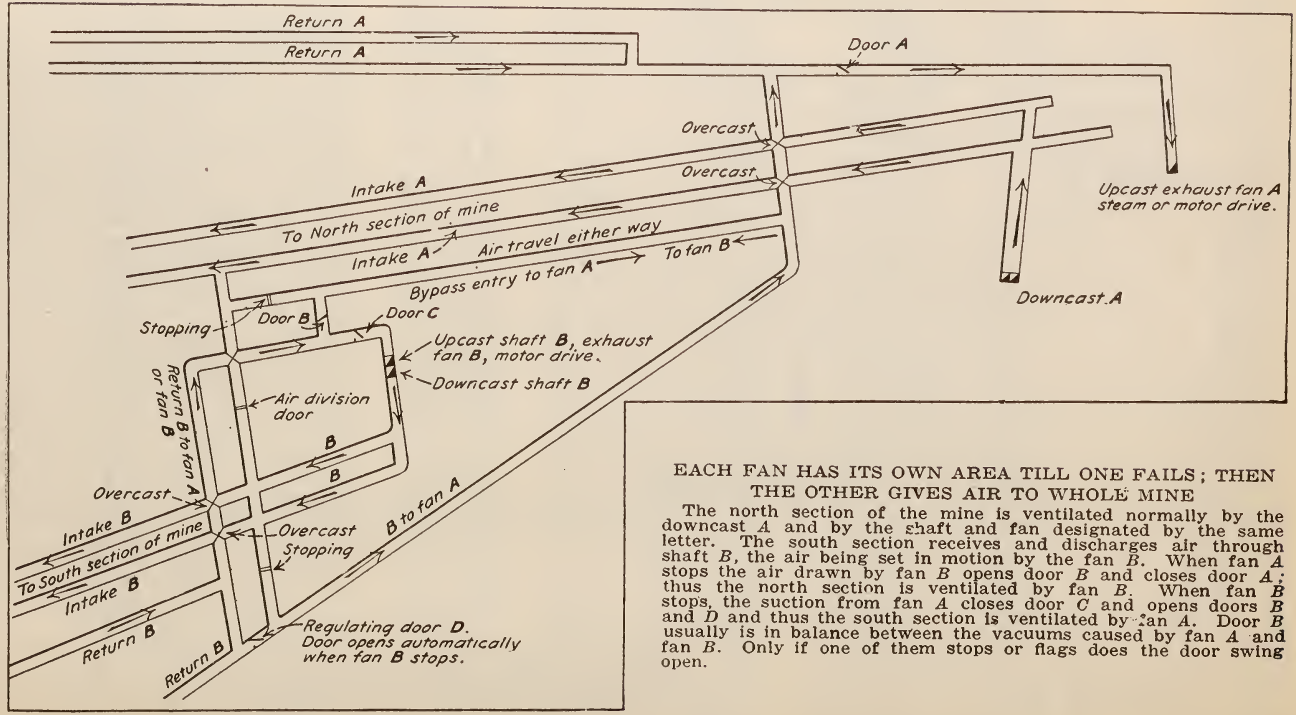
New safety and ventilation equipment provided by the Royal management include air shaft, fan, piping for automatic sprays, rock crusher, boundary airway extensions and other most advanced safety features. We publish here a technical description of the new air shaft and fan installation as given by Mr. Samuel Tescher, general superintendent for the Royal and National Fuel Company, in recent issues of Coal Age and Coal Industry.

Automatic Action Fan System

A new air shaft and fan installation was completed September 1, 1923, by the Royal Fuel Company at its Royal Mine, Aguilar, Colorado. The installation gives this property two ventilating fans, each with its separate intake, separate return and separate mine section, by means of a by-pass entry which allows either of the two returns to go to either fan, and by a system of doors and overcasts either fan can be made to ventilate the entire mine in case of disability, without any serious interruption to the ventilating current.

The new shaft has two compartments, each compartment being 9 ft. 6 in. by 9 ft. 11¼ in. inside measurements, and has a depth of 404 ft. The new shaft is located 1,600 ft. west of the present hoisting shaft and is consequently 1,600 ft. closer to the working places.

The shaft is lined with 4x12-in. S4S-T&G Oregon fir, with the exception of a 22-ft. concrete collar at the surface and a 13-ft. concrete base at the bottom. One compartment of this shaft is used as an intake or downcast, while the other is used as a return or upcast. The upcast compartment is connected by a steel housing to a No. 14 double inlet, reversible Sirocco fan; which is driven by a 200-hp. G. E. motor equipped with a semi-automatic controller. The new fan can be started or stopped from the hoisting engine house, where there is an attendant 24 hours per day.



EACH FAN HAS ITS OWN AREA TILL ONE FAILS; THEN THE OTHER GIVES AIR TO WHOLE MINE

The north section of the mine is ventilated normally by the downcast *A* and by the shaft and fan designated by the same letter. The south section receives and discharges air through shaft *B*, the air being set in motion by the fan *B*. When fan *A* stops the air drawn by fan *B* opens door *B* and closes door *A*; thus the north section is ventilated by fan *B*. When fan *B* stops, the suction from fan *A* closes door *C* and opens doors *B* and *D* and thus the south section is ventilated by fan *A*. Door *B* usually is in balance between the vacuums caused by fan *A* and fan *B*. Only if one of them stops or flags does the door swing open.

An automatic signal system rings a bell at the hoisting engine house as well as in the mine in case the fan stops or its speed is reduced to any appreciable extent.

The motor driving the fan is of ample size to take care of any overload, and will keep the fan in operation under single phase current.

Prior to the installation of the new fan and air shaft, the old fan, which is operated by either steam or electricity, delivered 96,000 cubic feet of air per minute at a 4.6 in. water gage, at a speed of 300 rpm. and was consuming 107 hp.

Since the installation of the new fan the old fan has delivered 85,000 cu. ft. of air per minute to its section of the mine at a 3.7-in. water gage, it being driven at a speed of 270 rpm., and consuming about 75 hp.

The new fan, running at a speed of 250 rpm. and consuming about 75 hp., is delivering 100,000 cu. ft. of air per minute to its section of the mine at a 3-in. water gage. In other words, the total quantity of air coursing through the mine has been practically doubled, though the power consumption has been increased less than 50 per cent. To have doubled the quantity of air coursing through the mine without some such change in the system as provided, would have been impracticable, as it would have required over 800 hp.

Gas analyses taken at three different points on the return aircourses prior to the new installation gave 0.9, 1 and 1.5 per cent methane respectively. Gas analyses taken after the new installation at these same points gave 0.4, 0 and 0.4 per cent methane respectively. The absence of methane in the second sample is due to its having been taken out of the intake air before that air had entered the mine far enough to be contaminated.

Tests at the mine after the new fan was installed show that if the new fan is stopped the old fan automatically picks up a portion of the load of the new fan. On one occasion the new fan was shut down for 30 minutes. At the end of that time changes were made which allowed the old fan to ventilate the entire mine, and mine officials reported no change in the most gaseous working places. The changes consumed about 15 minutes and were made, as stated, without a stoppage of the ventilating current.

In the planning of this new ventilating system the direction of the air in the mine was in no place changed. This proved to be an important factor, as the air travel is aided by differences in temperature. The two fans are now capable of delivering over 250,000 cu. ft. of air without overloading their present driving equipment.

Four important factors entered into the improvement of the ventilation as above outlined:

First—Shortening the distance of air travel by locating both the new intake and new return closer to the working faces.

Second—Reducing the total volume of air passing in the old intake and old return by dividing the mine into two sections.

Third—Placing of two additional splits in the air current.

Fourth—The installation of an additional ventilating fan.

Automatic Sprays Provided

An important safety feature added to the Royal equipment has been the installation of 7,700 feet of 2-inch piping and 10,000 feet of 1-inch piping fitted out with sprays so regulated as to automatically humidify the mine air.

All trips are wet down at the partings so as to eliminate the scattering of coal dust on the floor and ribs of the roadways. On this point a recent inspector's report states that "the roadways and tracks are in good condition; the dust is kept wet."

Another important safety unit is the Universal crusher recently installed for supplying rock dust to be placed on the Taffenel barrier shelves throughout such portions of the mine as cannot be properly humidified by spraying.

Boundary Airway System

No pillars are extracted at this property until the entries have reached the boundary and an air course has been driven along the boundary and completely around the area from which the pillars are to be extracted. Thus is afforded a complete circuit of air around the gob areas eliminating the accumulation of gas in the old workings.

In extracting pillars by this method at the Royal mine it is practically impossible for any employe to encounter an accumulation of gas in the workings when approaching a worked out area.

All stoppings are of concrete and all overcasts of steel and concrete. All doors are operated on a double or air lock system—that is, there is a considerable space between the double doors on each entry, allowing the closing of one before the other is opened and assuring a continuous and uninterruped air current.

A great advantage of the new shaft which is the largest ventilating shaft in Colorado, is that it allows an uninterrupted flow of air throughout the mine at all times. Interruptions due to traveling trips and hoisting cages are eliminated. The mine has four main intakes and four main returns of large sectional area.

Safety Engineering

Great credit is given Mr. G. F. Bowen, safety inspector at this mine, for the ingenuity shown in the installation of the doors, making ventilation of all workings entirely automatic, both fans operating jointly, or either one carrying the whole load by itself. This automatic feature largely eliminates the personal element—or rather the neglect of the personal element in satisfactory ventilation.

The Royal is the only coal mine in Colorado equipped with two fans that operate continuously or separately, and so arranged that either automatically take up the load of the other in case of failure on the part of either one.

The new shaft is equipped with an emergency hoist and provides an additional escapeway, supplementing the manway constructed two years ago near the hoisting shaft. All power wires at the Royal mine are located in the intake, non-haulage airways. All electrical machinery, including pumps and hoists, are located on intake air currents where there can be no possibility of gas accumulations, even in the event of protracted stoppage of the ventilating air currents.

All gob areas are properly ventilated and are accessible so that frequent examinations can be made.

All flame safety lamps used by mine officials are tested in a transparent receptacle containing an explosive mixture of gas and air, located in the lamp house so as to ascertain whether they are in a safe condition before being taken into the mine.

''Safety First'' is the watchword at this property. The company has spared no expense in carrying out this comprehensive safety program in which mine officials and employes co-operate.

Coal Mined by Pick Work

All coal at the Royal is mined by pick work. Shooting is done only in places where rolls or faults are encountered. No electric equipment is operated at any of the working faces, so that practically every conceivable safety measure is taken advantage of.

A natural asset of the Royal seam is the fact that it has a good solid sand rock roof, which not only adds materially to mining safety, but also obviates the mixing of impurities with the mine product.

Inspectors who have recently examined the Royal property report that ''The roof of the mine is good; all the coal is got by pick work; permissible powder is used; very little firing is done in the mine; a shot firer fires the shots.''

This not only reduces the chances of accident from the use and handling of explosives and from timbers being displaced and the roof shattered by powder shock, but it ''also insures a cleaner and coarser grade of coal by not molesting the roof or floor—the sources from which most of the impurities come.''

A High Grade Bituminous

Coal mined from the Royal seam is a very high grade bituminous, containing about 1½ per cent moisture, has a low ash content and will store indefinitely without deterioration.

An analysis of representative samples of Royal coal made by the United States Bureau of Mines gives the following determination:

	As Mined	Dry Coal
Moisture	1.71	0.0
Volatile Matter		35.26
Fixed Carbon		54.67
Ash		10.07
		100.00
Sulphur		.65
British Thermal Units		13,596

Regular Royal equipment includes, in addition to the new fan, the 2½x8 Jeffrey fan driven either by a General Electric motor or a McEwan steam engine; two 7x8 Deming pumps and a No. 9 Cameron; a 240 hp. steam hoist for shaft, two main 112 hp. hoists to shaft bottom and three smaller electric hoists; Edison Electric mine lamps are used.

Seam Averages 6 to 8½ Feet

The Royal seam averages some 6½ feet thick throughout the mine workings and in places as high as 8½ feet, and practically all clean coal from roof to floor.

As for continuity of seam, we are told by engineers who have inspected the property you can start at any given point in the main workings and walk for a mile in a given direction without encountering any noticeable fault. From the point where the main rock tunnel opens to the west, no fault of any significance has been encountered either in actual operations or in prospect drilling.

The slope manway furnishes an outlet airway and furnishes a dependable escapeway for the men in case of fire or other catastrophe. This manway is located near the main shaft opening and measures 6½x9 feet in the clear, equipped with stairs. The total length of the inclined portions being more than 400 feet.

By use of the block system of roof support no less than 90 per cent of Royal coal has been recovered to date. This high ratio is made possible by leaving large blocks, some of them as large as 300x1,800 feet—sufficient to serve as an effective barrier against "squeeze" and "creep" for the rooms standing on each side of the block.

Mr. Samuel Tescher, general superintendent and chief engineer for the company, has supervised the operation and development of the Royal mine since its inception, and is also general superintendent and chief engineer for the properties of the National Fuel company. The highly satisfactory condition of these properties is due to the capable management of Mr. Tescher and his staff who have spared no efforts in bringing up the standards of safety and efficiency.

PURITAN MINE

The National Fuel Company completed a new shaft at this mine, in Section 2, southeast of the present shaft. This shaft is connected with the main mine workings through a concrete rock tunnel, and is located southeast of a fault 900 feet wide which lies between the acreage of this mine in Section 2 and that situated in Sections 34 and 35.

The new shaft will allow the acreage in Section 2 to be properly ventilated and improve the ventilation in Sections 34 and 35, also giving an additional escapeway.

The size of the shaft is eight feet by twelve feet, divided into two equal compartments, and was made by making an upraise from the mine workings to the surface. When the occasion demands the company will install another fan.

Considerable money was spent to insure safety and raise the standard of sanitation for the men employed by the Victor-American Fuel Co. A Jeffrey fan and one 200 KW. convertor and transformer were installed at the Cass mine; one 150-KW. generator set at the Ravenwood mine and five sets of Fluess breathing apparatus at the Chandler mine, also sixteen Burrell gas masks were distributed among the mines and other improvements made, all tending to add to the efficiency and safety of the working conditions of the mines.

Concerning firing of shots in Boulder and Weld counties during working hours. Inspector King reports that four mines in Weld county, namely, the Evans, Sterling, Baum and Boulder Valley do all shot firing at quitting time. Inspector Graham reports that in Boulder county all the mines are still firing shots during working hours, but some of them have reduced the number fired during working hours.

With This A Miner Can Rescue Himself!

Self-Rescuer in mouth—Nose clip on nose—Ready to escape through "after damp."

Self-Rescuer carried in container—Always with the man—Sealed containers prevent deterioration.

Approved by U.S. Bureau of Mines

The M-S-A Self-Rescuer

EXPERIENCED MINING men confirm our belief that only a small proportion of men lost in mine explosions are killed by violence. The larger proportion die from breathing the "after damp" which contains poisonous carbon monoxide.

¶ The M-S-A Self-Rescuer provides a chemical which protects against carbon monoxide poisoning. By wearing one as shown in the picture, a man may escape through "after damp" in safety to the surface.

¶ Weighs only 13 ounces in use, twenty ounces in the case. Will protect for one hour.

Demonstrations on request —Ask for details of plan for installation throughout your mine.

Mine Safety Appliances Co.

Chamber of Commerce Bl'dg. Pittsburgh, Pa.

Chicago Denver · Huntington, W. Va. Los Angeles · New York Philadelphia · Pittsburg, Kas. San Francisco · St. Louis Seattle · Wilkes-Barre, Pa. (Kingston)

"Everything for Mine and Industrial Safety"

TABLE No. 2

POWER EQUIPMENT OF COAL MINES IN THE STATE OF COLORADO FOR YEAR ENDED DECEMBER 31, 1923

Name of Operator	Name of Mine	Power Plant										Pumps				Haulage					Air Compressors	
		Boilers				Engines								Pumps Delivering Water to the Surface			Number of Locomotives					
		Cylindrical		Tubular		Steam Engines (All Classes)		Internal Combust'n Engines (Gas)		Electric Dynamos (All Classes)												
		Number	Total Horse Power	Number	Total Horse Power	Number	Total Horse Power	Number	Total Horse Power	Number	Total Kilowatts	Number	Total Capacity Gallons per Minute	Number	Total Gallons per Minute	Number of Horses and Mules	Gasoline	Steam	Compressed Air	Electric	Number	Total Capacity Cubic Feet Per Minute
Ajax Coal M. Co.	Capitol	3	300			6	350					6		2	150	5					1	750
Alamo Coal Co.	Alamo			2	500	6				2	1350										1	500
Altitude Coal Co.	Altitude			1	25	1	15					1		1		2						
American Smelting & Ref. Co.	San Juan															3				2		
American Smelting & Ref. Co.	Boncarbo	Po	wer	Pu	rchas	ed				2	300	6	450	1	100					9		
Anchor Coal Co.	Anchor							3	80							1						
Arnold & Shaklee	Sharon											2	150	2	160	1					2	1000
Axial Basin Dev. Co.	Collom	Mi	ne	Clo	sed.	No	repo	rt	Sub	mit	ted											
Aztec	Toltec			4	360							5	2310	2	400	18				1	2	1000
Baldwin Fuel Co.	Baldwin-Star			1	30											1						
Barker, Wright	Wright	Str	ip	Mi	ne			1	6			2	225	2	125	6						
Baudino & Co.	Morning Star															1						
Bear Canon Coal Co.	Bear Canon Nos. 3 and 6											5		1		26				1	1	
Bear River Coal Co.	Bear River			5	560	4	310			2	175	10	365	1	65	3						
Bedlien, Geo.	White Ash	No	Equ	ip	ment																	
Bell Mining Co.	Eureka			2	160	1	75					1	100	1	100	5					2	
Bell & Stout	Hoye-Superior	No	Equ	ip	ment																	
Berry, Chas. T.	Berry															1						
Big Five Coal Co.	Blue Goose	1	40			1	25					2		2							1	
Big Four Coal & Coke Co.	Centennial			4	300	2	100					6	200	1	20	9					1	1000
Black Canon Coal & Fuel Co.	Caddell															3				2		
Black Hawk Coal Co.	Mohawk	No	Equ	ip	ment																	
Black Hawk Coal Co.	Primrose	Mi	ne	Ab	and	on	ed															
Black Hills Coal Co.	Black Hills			1	25	1	25					1	10									
Bluff Springs Coal Co.	Bluff Springs															2				1		
Boaglio Coal Co.	Pickford															1						
Book Cliff Coal Co.	Book Cliff	No	Rep	ort	Sub	mit	ted															
Boulder Coal M. Co.	Black Diamond											2	100	2	90	5						
Boulder Valley Coal Co.	Boulder Valley			3	375							3		1		8					1	1000
Bracken & Cozza	Harvey Gap															1						
Brennan Coal M. Co.	Brennan											2	125	2	75	7						
Brewster Independent Coal Co.	Brewster											1	100	1	100	2				1		
Brown Coal Co.	Round Oak															1						
Caddell & Son	Hezron															9						
Calumet Fuel Co.	Perins Peak															8				2		
Calumet Fuel Co.	Calumet											7	450	2	280	28				1		
Canon District Coal Co.	Florence-Canon	No	Equ	ip	ment																	
Canon-Reliance Coal Co.	Canon	Po	wer	Pu	rchas	ed						2	600	1		10				3		
Canon-Reliance Coal Co.	Reliance	Po	wer	Pu	rchas	ed						3	250	1	200	5						
Cedar Hill Coal & Coke Co.	Greenville															8				2		
Champion Coal M. Co.	Champion															2						
Chew, J. S.	Missouri															1						
Christensen Coal Co.	Christensen			2	165	2	110					2	63	2	110	2		1	1		1	284
Clayton Coal Co.	Clayton			4	560	6	640			1	150	5	600	1	100	13				1	1	100
Collier Coal Co.	Congo															1						
Colorado Canon Coal Co.	Newlin			1	40	1	20					1	18			1						
Colorado Fuel Co.	Curtis			2	160	1	180			1	62½	1	225	1	225	1		1				
Colorado Fuel & Iron Co.	Coal Creek	Po	wer	Pu	rchas	ed						3	160	2	100	21				3		
Colorado Fuel & Iron Co.	Rockvale			1	100							3	100	1	60	25				6		
Colorado Fuel & Iron Co.	Fremont			2	190	1	120					5	1386	3	700	28						
Colorado Fuel & Iron Co.	Nonac			2	200							3	200	1	100	6		1				
Colorado Fuel & Iron Co.	Emerald											2	120	1	60	6						
Colorado Fuel & Iron Co.	Elk Mountain			5	550	10	750			3	257	8	430	2	85	8					2	1800
Colorado Fuel & Iron Co.	Crested Butte			6	650	8	570			1	45	2	350			27					1	1200
Colorado Fuel & Iron Co.	Robinson Nos. 1 and 2			4	400	2	200			2	300	7	3000	4	1600	46 46				2 1		
Colorado Fuel & Iron Co.	Walsen											2	1000	1	1100	3				1		
Colorado Fuel & Iron Co.	Ideal									1	100	3	100	1	26	52				1		
Colorado Fuel & Iron Co.	Lester									2	240	9	2225	2	700	24				1	1	
Colorado Fuel & Iron Co.	Cameron											9	1625	3	1400	20						
Colorado Fuel & Iron Co.	Pictou									1	500	6	1850	3	900	22						
Colorado Fuel & Iron Co.	Kebler No. 1											2	75	1	50					4		
Colorado Fuel & Iron Co.	Kebler No. 2			4	500	3	350					16	635	3	350	16				10		
Colorado Fuel & Iron Co.	Jobal															1				2		
Colorado Fuel & Iron Co.	Frederick			2	200	1	100			2	150	11	475	2	200	78				7		
Colorado Fuel & Iron Co.	Primero			8	800	4	390			2	440	11	607	4	267	56				7		
Colorado Fuel & Iron Co.	Morley			2	1000	6	650			2	300	5	400	2	550	80		1		1		
Colorado Fuel & Iron Co.	Sopris			8		7	1180					16	2400	3	360	60				6		
Colorado Fuel & Iron Co.	Tabasco			4	400	2	600					8	850	3	650	58				2		
Colorado Fuel & Iron Co.	Berwind			2	200	1	76			3	600	14	775	2	300	61				6	1	75
Colorado Fuel & Iron Co.	Toller			4	400	6	723					8	690	1	200	28						
Colorado Fuel & Iron Co.	Engle			4	400	4	650					2	50			3						
Colorado Lumber & Inv. Co.	Nonparell			2	260							2	200	1	100	4					1	
Colorado Lumber & Inv. Co.	Garfield	El	ectric	Po	wer	Pur	chase									4		1				
Colorado Springs Co.	City											4	676	1	400	5			1			
Colorado & Utah Coal Co.	Harris			6	830	2	800			2	320	7	540	1	300	9				1		
Consolidated Coal & Coke Co.	Baum			4	500	4	400			2	160	9	360	2	30	16				2		
Converse, Frank	Converse															2						
Co-operative Fuel Co.	Cambro	Clo	sed,	No	Rep	ort																
Corley, W. D.	Patterson			1	120	2	65					3	450	1	300					1		
Corley, W. D.	Franceville			1	120	1	40					1	50	1	50							
Cornwell, J. V.	Niggerhead															1						
Corra, John	Corra															1						
Cortez Coal Co.	Kelly	No	Equ	ip	ment																	
Cottonwood Coal Co.	Cottonwood											1	76			1						
Cracker Jack Coal Co.	Cracker Jack															1						
Crested Butte Anthracite M. Co.	Smith-Anthracite	2	150			3	140					1	Natur	al	Drn'ge	8						
Crested Butte Coal Co.	Bulkley No. 2			1	80	1	25	1	4½				Natur	al	Drn'ge	6						
Crown Fuel Co.	Crown	2	250			1	400					1	60	1	10	14					2	1200
Cuchara Canon Coal Co.	Cuchara Canon			2				1	4							2						
Danville Coal Co.	Danville			1	100	1	35									1						
Davies Coal Co.	Lewis							1	5			2	17	2	20	1						
De Graffenried, J. R.	De Garffenried															1						
Delta Coal Co.	Red Canon															1						
Dick Coal Co.	Dix											2	85	2	70	6				2		
Donald Coal Co.	Gorham No. 2															1					2	130
Double Dick Coal Co.	Double Dick															1				1		
Drennan Coal Co.	Drennan															3						
Drott, John H.	Liberty Bell	No	Rep	ort	Sub	mit	ted															
Edgell, T. E.	Edgell	No	Equ	ip	ment																	
Empire Coal M. Co.	Empire			1	40							10	2000	1	600	11					1	147
Enrietta & Co.	McIntosh	No	Equ	ip	ment																	
Estes, Frank	Estes	No	Equ	ip	ment																	
Fairfield, E. F.	Fairfield															1						
Fairview Coal Co.	Fairview															1						
Farmer-Mutual Coal Co.	Farmer-Mutual															1						
Florida Grange	Grange	No	Equ	ip	ment																	
Fort Lupton Coal Co.	Witherbee			2	140	1	76				1	2	52	2	26	1						
Freeman, J. R.	Freeman															1						
French & Fielding	School Sec. Lease															1						
Fruth & Stone	Leader No. 1							1	20							1						
Fruth & Stone	Leader No. 3															1						
Galloway, John R.	Galloway	No	Equ	ip	ment																	
Gilson Asphaltum Co.	Carhonera															2						
Golden Dawn Coal Co.	Golden Dawn			1	100																	
Good Coal Co.	Oldland	No	Equ	ip	ment																	
Gordon Coal Co.	Gordon											6	400	1	400	9				1		
Grand Junction M. & F. Co.	Cameo	2	200	2	300					2	176	5	100	2	60	9				3		
Grand Junction M. & F. Co.	Sterling			2	300	3	400			1	100	5	262	1	100	9				1		
Green Valley Coal Co.	GreenValley											2	40			2						
Griffiths Coal Co.	Griffiths																			1		
Hall, A. W. & Son	Red Mountain			2	160	1	18					1	100	1	30			1				
Happy Canon Coal Co.	Happy Canon			1	38	1	4							1	15			1				
Hawkes Garage	Wright	No	Equ	ip	ment																	
Hayden Bros. Coal Corp.	Hayden			6	900	1	500			2	480	4	360	1	175			2		6		
Hayden Valley Mutual Coal Co.	Mutual			1	20							1	10	1	10							

International Fuel Corp.	Wolf Creek			2	300	5	157					2	12	1	12	4						
International Fuel Corp.	Evans			3	350	6	243			1	50	14	800	3	620	12				1	2	2100
Investors Securities Co.	Security			1	50	1	5	1	1½			1	25	1	16						1	900
Irons, Wm. Jr.	Baldy															1						
Jeffryes Fuel Co.	Jeffryes															4				1		
Jewel Collieries Co.	Jewel							1	7½											5		
Joerger Fuel Co.	Beshoar															1						
Juanita Coal & Coke Co	King			2	500	2	75			2	750	3	300			10				1		
July Coal Co.	Amador															1						
Keota Coal Co.	Hill															1						
Keystone Mining Co.	Keystone			2	125							2	300	2	300	4						
Kotala, Ludvik	Prospect	Clo	sed.	No	Rep	ort																
La Veta Coal Co.	Fern			1	60	1	35					1	100	1	100							
Leyden Coal Co.	Leyden No. 3			9	1700	9	1452			2	235	14	1250	2	260	20				1	2	3200
Liberty Coal Co.	Liberty	Clo	sed.	No	Rep	ort																
Liberty Coal & Merc. Co.	Nearing					2	66										1					
Malone & Dennis	Verdun															1						
Marchetti, J. R.	Marion															1						
Marsh, R.	Fishers Peak															1						
Mattivi & Son	Bunker Hill							1	4							1						
McGinley, Wm.	McGinley															1						
McKee, Robert	McKee	No	Equ	ip	ment																	
McLendon, O. K.	Stove Canyon															2						
McMillin Bros.	Rollins			1	44											2					1	60
McNally & Thompson	Maitland No. 1											2	50	1	30	8				1		
McNally & Thompson	Maitland No. 2															1						
McNeil Coal Co.	MacGregor			3	750	3	425			3	276	6	611	2	30	3				4		
Mesa Fuel Co.	Winger															1						
Midwest Coal Co.	Midwest											4	40	1	40	2						
Mingan, Mike	Kurtzville															1						
Minnie Coal Co.	Minnie															1						
Moffat Coal Co.	Oak Hills No. 1	4	1000	1	300	2	450			3	850	8	430	1	131	6				2	1	1000
Moffat Coal Co.	Oak Hills No. 2	See	Above									1	37	1	37	10				2		
Mountain View Coal Co.	Walden	1	75									1	22	1		2	1					
Mt. Evans Fuel Co.	Mt. Evans	1	35									1		1		1						
Mutual Coal Co.	Mutual			3	450	3	190					9	3200	5	800	12				5		
National Fuel Co.	Monarch No. 2			3	100	1	160					9	200	2	75	24				2	2	1000
National Fuel Co.	Thor			1	100	2	75									20						
National Fuel Co.	Puritan			6	600	6	340			1	76	14	300	3	200	31				2	2	1800
Naturita Stores Co.	Cloverdale	No	Equ	ip	ment																	
New Castle Syndicate Co.	Allen No. 2	Clo	sed.	No	Rep	ort																
North Magnet Coal Co.	Magnet															2						
North Park Coal Co.	Moore No. 1	2	200			2	120					3	193	1	20	4						
North Park Coal Co.	Moore No. 2	1	100			3	150					3	113	1	26	2						
Nossaman & Fowler	Pagosa	1	10			1	6					1	8									
Oakdale Coal Co.	Oakdale	6	750			4	450			2	375	7	650	1	65	20				3	1	1000
Ohio Creek Coal M. Co.	Ohio Creek			1	100					1	75	2	50	2	60	6						
Ohkraut Mining Co.	Ohkraut															1						
O. K. Coal Co.	O. K.															1						
Oliver Coal Co.	Oliver	1	45			1	60					4	250	2	15	2						
Palisade Coal & Supply Co.	Palisade															3				1		
Paonia Farmer Coal Co.	Paonia					1	6					1	300	1	300	1						
Peacock Coal Co.	Peacock															1						
Pennington, O. W.	Midway	No	Equ	ip	ment																	
Peoples Finance Coal Co.	Fox	2	180			2	80					6	1200	3	1000	7					2	1000
Petry, Samuel	Jack O'Lantern															1						
Pikes Peak Cons. Coal Co.	Pikeview	3	100	1	250					3	380	3	340	2	300	16				6		
Pine Fuel Co.	Fawcett															1	1					
Postal Coal Co.	Postal	Clo	sed																			
Prairie Canon Coal Co.	Prairie Canon															2				1		
Rankin, Chas. H.	Star	Clo	sed.	No	Rep	ort																
Rapini & Hughes	Placita			1	65	1	40									1						
Rapson Coal M. Co.	Rapson	3	260			4	200			1	62½					12						
Rasmussen, H. J.	City															1						
Rauman Coal Co.	Rauman	No	Equ	ip	ment																	
Red Ash Coal Co.	Red Ash															1						
Reynolds & Donnelly	Black Diamond							1	[illegible]												1	
Rifle Coal Co.	McLearn															1						
Riley, J. D.	Riley	No	Equ	ip	ment																	
Rio Blanco Coal Co.	Rio Blanco	No	Rep	ort																		
Riverside Coal Co.	Riverside															1						
Rocky Mountain Fuel Co.	Industrial			3	400	6	560			3	240	6	340	2	45	14				4		
Rocky Mountain Fuel Co.	Simpson	4	600			4	600			2	170	16	2300	4	830	8				1	1	1600
Rocky Mountain Fuel Co.	Acme			3	450	5	350			2	150	9	800	4	500	14				1	2	1618
Rocky Mountain Fuel Co.	Gorham											1	60	1	60	3					1	200
Rocky Mountain Fuel Co.	Vulcan	1	125	2	250	3	285			1	35	7	700	3	200	7		1	2		1	926
Rocky Mountain Fuel Co.	Standard			6	490	4	205					6	244	1	75	8				1	2	1050
Rocky Mountain Fuel Co.	Alpine			3	330	2	310			2	150	3	325	1	150	11				2		
Rocky Mountain Fuel Co.	Forbes No. 9	1	Not	in	Use					1	100	4	140	1	35	15	1			*3		
Rocky Mountain Fuel Co.	Southwestern			1	100	1	80	1	60	2	78					4						
Rocky Mountain Fuel Co.	La Belle															9				1		
Rocky Mountain Fuel Co.	Columbine									3	450	6	600	2	400	34				4		
Rocky Mountain Fuel Co.	Grant			1	30					2	175	3	320	1	200	11				2		
Rocky Mountain Fuel Co.	Frederick			4	360	3	240					3	625	2	200	4					1	1000
Ross Coal Co.	Horace			3	225	6	200					3	250	1	50	12					2	725
Routt County Coal Co.	Cozard	No	Rep	ort																		
Routt-Pinnacle Coal Co.	Routt-Pinnacle			2	300	1	300			1	200	2	32	1	20	2				4		
Royal Fuel Co.	Royal			3	240	2	300			1	2½	13	800	2	175	22				3		
Royal Gorge Coal Co.	Royal Gorge									2	187											
Rudisill, O. C.	Butcher Knife															1						
Rugby Collieries Co.	Rugby	Po	wer	Pu	rchas	ed														6		
Rush Coal Co.	Rush			1	16	1	16															
Russell, W. E. Coal Co.	Russell			3	376	1	176					7		1	45	16					2	1350
Seven Points Coal Co.	Seven Points															3						
Shamrock Coal Co.	Crane															3						
Shamrock Coal Co.	Shamrock			3	185	4	150					3	500	2	290	6						
Simpson, Joseph	Marr							2	12			1	20	1	20		1					
Solar Coal Co.	Solar	No	Rep	ort																		
South Canon Mine Leasing Co.	South Canon			1	80	2	45			1		1	150			2						
Square Deal Fuel Co.	Square Deal	No	Equ	ip	ment																	
Stanley Mine Co.	Stanley															8						
States Coal Co.	States															1						
Stillwagon, J. W.	Old Coalby															1						
Stokes, W. D.	Stokes											1	300	1	181	2						
Sulphur Coal Co.	Sulphur	No	Equ	ip	ment																	
Sumner, L.	Cowan															1						
Sunnyside Coal M. Co.	Sunnyside			1	100					2	175	5	320	1	80	6				2		
Sunshine Coal Co.	Sunshine															2						
Temple Fuel Co.	Brodhead No. 9	1	60			1	20			2	240	14	175	3	175	11				9		
Thomas Coal Co.	Thomas															2						
Three Pines Coal Co.	Three Pines											1	100	1	20	9		1				
Tipotsch, Frank	Tipotsch	No	Equ	ip	ment																	
Triangle Coal Co.	Triangle	Clo	sed.	No	Rep	ort																
Trinidad Coal Co.	Baldy Mt.															2						
Union Coal & Coke Co.	Pryor									1	100	1	60	1	60	22						
United Collieries Co.	Monroe			3	300	5	300					2	100	1	80	6		1			2	700
Utah Fuel Co.	Somerset			7	826	7	1422			2	375	4	1230	2	520	23						
Vesta Mines Inc.	Vesta											2	80	1	3000	6						
Vezzetti & Moschetti	Brookside											1	400	1	400	4				1		
Vickers Coal Co.	Vickers											3	80	1	80						1	100
Victor-American Fuel Co.	Chandler			2	500					2	360	8	700	2	75	40		2		1		
Victor-American Fuel Co.	Radiant									1	160	5	162	2	11	16				2		
Victor-American Fuel Co.	Ravenwood									1	100	7	572	2		15				2		
Victor-American Fuel Co.	Delagua									2	600	10	635	2	75	75				13		
Victor-American Fuel Co.	Cass									2	300	3	60	1	1	25				4		
Victor-American Fuel Co.	Hastings									1	150					17				2		
Victor-American Fuel Co.	Pinnacle			3	300	3	480			3	350	4	174	2	10	6		2		2		
Victor-American Fuel Co.	Wadge	2	200	1	250	1	194			1	150	4	244	2	11	10						
White River Lumber Co.	Lion Canon			1	10											1		1				
Williamsburg Coal Co.	Williamsburg	Clo	sed.	No	Rep	ort																
Willie Coal Co.	Willie															1						
Wilton Coal Co.	Pritchard															1						
Winton Coal Co.	Winton															1						
Wright, Claude	Fairview															1						
Wyoming & Colorado Coal Co.	Rainbow	Clo	sed.	No	Rep	ort																
Yampa Coal Co.	Yampa			1	200	1	100					1	100	1	25	2		1				
Young & Caddell	Young	No	Rep	ort																		

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* Not in Use.

TABLE No. 4

MINING MACHINES AND EXPLOSIVES USED AT COAL MINES IN THE STATE OF COLORADO FOR YEAR ENDED DECEMBER 31, 1923

Name of Operator	Name of Mine	Mining Machines		Coal Mined by (Short Tons)			Explosives Used (Pounds)		
		No. Operated by Compressed Air	No. Operated by Electricity	Hand	Machine	Total	Black Powder	Dynamite	Permissible Explosives
Ajax Coal M. Co.	Capitol	4			24,725	24,725	9,600		750
Alamo Coal Co.	Alamo		2		3,341	3,341	875		600
Altitude Coal Co.	Altitude			7,478		7,478	1,175	21	
American S. & R. Co.	San Juan			25,421		25,421			1,645
American S. & R. Co.	Boncarbo	1	8	70,863	155,618	226,481		1,696	38,463
Anchor Coal Co.	Anchor			1,150		1,150	1,000		
Arnold & Shaklee	Sharon	2		16	909	925			
Axial Basin Dev. Co.	Collom	*	*	171		171			
Aztec Coal M. Co.	Toltec	2	4	1,538	39,692	41,230		2,475	5,180
Baldwin Fuel Co.	Baldwin-Star			6,311		6,311	2,500		
Barker, Wright	Wright			991		991	625		
Baudino & Co.	Morning Star			4,998		4,998	1,500		
Bear Canon Coal Co.	Bear Canon Nos. 3 and 6		3	4,680	83,697	88,377			15,100
Bear River Coal Co.	Bear River		1	25,992	7,658	33,650	10,000	405	
Bedlien, Geo.	White Ash			1,368		1,368	2,375		
Bell Mining Co.	Eureka	4			36,469	36,469	12,000		
Bell & Stout	Hoye-Superior			751		751	200		
Berry, Chas. T.	Berry			565		565	150		
Big Five Coal Co.	Blue Goose	†	1	1,984		1,984	625		
Big Four Coal & Coke Co.	Centennial	10	2		98,346	98,346	32,025	460	
Black Canon Coal & Fuel Co.	Caddell	2		2,538	10,822	13,360	11,250	50	850
Black Hawk Coal Co.	Mohawk			2,292		2,292		500	2,450
Black Hawk Coal Co.	Primrose			202		202			
Black Hills Coal Co.	Black Hills			1,400		1,400	1,250		50

TABLE No. 4—Continued

MINING MACHINES AND EXPLOSIVES USED AT COAL MINES IN THE STATE OF COLORADO FOR YEAR ENDED DECEMBER 31, 1923

Name of Operator	Name of Mine	Mining Machines		Coal Mined by (Short Tons)			Explosives Used (Pounds)		
		No. Operated by Compressed Air	No. Operated by Electricity	Hand	Machine	Total	Black Powder	Dynamite	Permissible Explosives
Bluff Springs Coal Co.	Bluff Springs		1		11,526	11,526	250	600	
Boaglio Coal Co.	Pickford			1,895		1,895			
Book Cliff Coal Co.	Book Cliff	*	*	3,541		3,541			
Boulder Coal M. Co.	Black Diamond		2		10,098	10,098			
Boulder Valley Coal Co.	Boulder Valley	8	2		88,427	88,427	27,725	147	460
Bracken & Cozza	Harvey Gap			1,184		1,184			700
Brennan Coal M. Co.	Brennan		4	180	36,377	36,557	6,700		800
Brewster Independent Coal Co.	Brewster			4,323		4,323	875	350	
Brown Coal Co.	Round Oak			1,910		1,910	300		50
Caddell & Son	Hezron			36,690		36,690			7,000
Calumet Fuel Co.	Calumet		9	52,298	149,874	202,172	7,650		41,295
Calumet Fuel Co.	Perins Peak		3	18,856	34,914	53,770			6,636
Canon District Coal Co.	Florence-Canon		1		4,248	4,248	750	250	
Canon-Reliance Coal Co.	Canon	‡	‡	80,512		80,512			6,650
Canon-Reliance Coal Co.	Reliance		2	26,561	3,942	30,503			5,632
Cedar Hill Coal & Coke Co.	Greenville			16,195		16,195			5,000
Champion Coal M. Co.	Champion			5,599		5,599		100	200
Chew, J. S.	Missouri			168		168	200		
Christensen Coal Co.	Christensen	6			3,781	3,781	2,500		300
Clayton Coal Co.	Clayton	2	3	11,381	182,121	193,502	51,000	100	
Collier Coal Co.	Congo			340		340			
Colorado Canon Coal Co.	Newlin			2,469		2,469	1,150		25
Colorado Fuel Co.	Curtis			3,569		3,569	2,150		
Colorado Fuel & Iron Co.	Coal Creek			87,755		87,755	4,572		5,974

Colorado Fuel & Iron Co.	Rockvale		2	53,762	21,361	75,123	6,528		7,215
Colorado Fuel & Iron Co.	Fremont		2	45,991	23,380	69,371	2,060		5,138
Colorado Fuel & Iron Co.	Nonac		3	1,551	31,581	33 132	7,125		50
Colorado Fuel & Iron Co.	Emerald			18,184		18,184	960		796
Colorado Fuel & Iron Co.	Elk Mountain			72,541		72,541	2,625		11,958
Colorado Fuel & Iron Co.	Crested Butte			71,393		71,393			3,884
Colorado Fuel & Iron Co.	Robinson-Walsen	4	15	67,682	212,376	280,058	8,975		34,427
Colorado Fuel & Iron Co.	Ideal			232,391		232,391			88 991
Colorado Fuel & Iron Co.	Lester		3	158,181	41,816	199,997			40,421
Colorado Fuel & Iron Co.	Cameron		9	37,190	111,654	148,844			15,761
Colorado Fuel & Iron Co.	Pictou		4	23,692	53 250	76,942			7,646
Colorado Fuel & Iron Co.	Kebler No. 1		1		4,749	4,749	2,367		18
Colorado Fuel & Iron Co.	Kebler No. 2		5	24,884	19,517	44,401	17,607		1,671
Colorado Fuel & Iron Co.	Jobal		3	640	35,670	36,310			5,504
Colorado Fuel & Iron Co.	Frederick		3	257,548	51,195	308,743			41,375
Colorado Fuel & Iron Co.	Primero			262,215		262,215			26,721
Colorado Fuel & Iron Co.	Morley			250,488		250,488			17,690
Colorado Fuel & Iron Co.	Sopris		4	185,317	46,578	231,895			58,323
Colorado Fuel & Iron Co.	Tabasco		2	160,028	52,855	212 883			24,496
Colorado Fuel & Iron Co.	Berwind		3	128,569	54,810	183,379			19,490
Colorado Fuel & Iron Co.	Toller		3	96,558	24,755	121,313			8,029
Colorado Fuel & Iron Co.	Engle			8,410		8,410			130
Colorado Lumber & Inv. Co.	Nonpareil	3		6,162	9,243	15,405	500		
Colorado Lumber & Inv. Co.	Garfield		1	13,190	4,713	17,903	11,975		
Colorado Springs Co.	City		2	31,002	28,632	59,634	18,600		255
Colorado & Utah Coal Co.	Harris		1	205,194	5 114	210,308	119,050	2,914	
Consolidated Coal & Coke Co.	Baum		7		131,531	131,531	68,000		
Converse, Frank	Converse			1,339		1,339			
Co-operative Fuel Co.	Cambro	*	*	1,108		1,108			
Corley, W. D.	Patterson		2	12,959	6,390	19,349	10,325		
Corley, W. D.	Franceville			1,016		1,016	625		
Cornwell, J. V.	Niggerhead			760		760			2,000
Corra, John	Corra			650		650	750	150	150
Cortez Coal Co.	Kelly			1,706		1,706	875	10	
Cottonwood Coal Co.	Cottonwood			1,145		1,145	800		
Cracker Jack Coal Co.	Cracker Jack	2		3,524	5,286	8,810	3,750		
Crested Butte Anthracite M. Co.	Smith-Anthracite			16,692		16 692	8,525		
Crested Butte Coal Co.	Bulkley No. 2			23,066		23,066	8,475		
Crown Fuel Co.	Crown	6	1	3,883	48,168	52,051	16,850		
Cuchara Canon Coal Co.	Cuchara Canon	1		5,273	820	6,093	9 750		

TABLE No. 4—Continued

MINING MACHINES AND EXPLOSIVES USED AT COAL MINES IN THE STATE OF COLORADO FOR YEAR ENDED DECEMBER 31, 1923

Name of Operator	Name of Mine	Mining Machines		Coal Mined by (Short Tons)			Explosives Used (Pounds)		
		No. Operated by Compressed Air	No. Operated by Electricity	Hand	Machine	Total	Black Powder	Dynamite	Permissible Explosives
Danville Coal Co.	Danville	......	......	4,305	......	4,305	2,500	......	......
Davies Coal Co.	Lewis	......	......	1,075	......	1,075	725	......	......
De Graffenried, J. R.	De Graffenried	......	......	250	......	250	250	......	......
Delta Coal Co.	Red Canon	......	......	2,419	......	2,419	250	......	......
Dick Coal Co.	Dix	......	3	......	27,680	27,680	......	......	3,874
Donald Coal Co.	Groham No. 2	1	......	......	1,499	1,499	1,000	......	......
Double Dick Coal Co.	Double Dick	......	1	......	7,711	7,711	1,000	200	100
Drennan Coal Co.	Drennan	......	......	1,282	......	1,282	......	......	......
Drott, John H.	Liberty Bell	*	*	449	......	449	......	......	......
Edgell, T. E.	Edgell	......	......	100	......	100	......	......	......
Empire Coal M. Co.	Empire	......	......	73,175	......	73,175	925	......	5,590
Enrietta & Co.	McIntosh	......	......	331	......	331	......	......	......
Estes, Frank	Estes	......	......	325	......	325	50	500	......
Fairfield, E. F.	Fairfield	......	......	172	......	172	250	......	200
Fairview Coal Co.	Fairview	......	......	600	......	600	1,200	......	......
Farmer-Mutual Coal Co.	Farmer-Mutual	......	......	980	......	980	625	50	......
Florida Grange	Grange	......	......	144	......	144	......	......	......
Fort Lupton Coal Co.	Witherbee	1	......	......	5,216	5,216	1,900	1,050	......
Freeman, J. R.	Freeman	......	......	824	......	824	100	100	......
French & Fielding	School Sec. Lease	......	......	2,147	......	2,147	500	400	......
Fruth & Stone	Leader No. 1	......	......	8,166	......	8,166	......	......	......
Fruth & Stone	Leader No. 3	......	......	1,269	......	1,269	6,275	......	......
Galloway, John R.	Galloway	......	......	109	......	109	200	......	......
Gilson Asphaltum Co.	Carbonera	......	......	11,058	......	11,058	1,250	......	1,400

Golden Dawn Coal Co.	Golden Dawn	1			1,980	1,980			
Good Coal Co.	Oldland			930		930	1,025		
Gordon Coal Co.	Gordon		5	6,094	60,990	67,084	21,125		1,000
Grand Junction M. & F. Co.	Cameo		4	28,032	69,990	98,022	6,500	2,100	4,620
Grand Junction M. & F. Co.	Sterling		3	2,462	105,968	108,430	20,150		
Green Valley Coal Co.	Green Valley			5,038		5,038	1,550		
Griffiths Coal Co.	Griffiths		1	230	5,081	5,311	2,350		50
Hall, A. W. & Son	Red Mountain			4,934		4,934	1,250	250	
Happy Canon Coal Co.	Happy Canon			600		600	1,500	2,000	
Hawkes Garage	Wrights			210		210	500		
Hayden Bros. Coal Corp.	Hayden No. 2			57,417		57,417	22,950		
Hayden Valley Mutual Coal Co.	Mutual			2,675		2,675	500		
Hidden Treasure M. Co.	Hidden Treasure	*	*	1,208		1,208			
Huerfano Coal Co.	Ludlow		3	37,370	15,660	53,030		100	6,000
Hunter, J. B.	Hunter			236		236			
Independent Coal Co.	Independent			733		733	150		
International Fuel Corp.	Champion	6			19,679	19 679	18,750		
International Fuel Corp.	Wolf Creek			17,471		17,471	13,750		
International Fuel Corp.	Evans	8	1		95,550	95,550	47,250		
Investors Securities Co.	Security			2,010		2,010	1,500		
Irons, Wm. Jr.	Baldy			2,251		2,251	1,500		
Jeffryes Fuel Co.	Jeffryes		1	2,158	4,000	6,158			600
Jewel Collieries Co.	Jewel		3	19,657	21,000	40,657		50	7,500
Joerger Fuel Co.	Beshoar			1,794		1,794			40
Juanita Coal & Coke Co.	King			80,727		80,727	20,000		
July Coal Co.	Amador			361		361	250		
Keota Coal Co.	Hill			160		160	200		
Keystone Mining Co.	Keystone		2	33,528	11,762	45,290			
Kotala, Ludvik	Prospect	*	*	199		199			
La Veta Coal Co.	Fern			1,044		1,044	375		
Leyden Coal Co.	Leyden No. 3	11		55,076	94,931	150,007	42,800	50	
Liberty Coal Co.	Liberty	*	*	2,039		2,039			
Liberty Coal & Merc. Co.	Nearing	1		637	500	1,137	1,500		
Malone & Dennis	Verdun			392		392			26
Marchetti, J. R.	Marion			2,856		2,856			1,800
Marsh, R.	Fishers Peak			525		525			150
Mattivi, Steve & Son	Bunker Hill			3,000		3,000			
McGinley, Wm.	McGinley			664		664	1 000		100
McKee, Robert	McKee			200		200	250		
McLendon, O. K.	Stove Canyon			1 485		1 485	1 200		

TABLE No. 4—Continued

MINING MACHINES AND EXPLOSIVES USED AT COAL MINES IN THE STATE OF COLORADO FOR YEAR ENDED DECEMBER 31, 1923

Name of Operator	Name of Mine	Mining Machines		Coal Mined by (Short Tons)			Explosives Used (Pounds)		
		No. Operated by Compressed Air	No Operated by Electricity	Hand	Machine	Total	Black Powder	Dynamite	Permissible Explosives
McMillin Bros.	Rollins	1	......	......	1,599	1,599	400	......	......
McNally & Thompson	Maitland Nos. 1 and 2	......	5	......	40,066	40,066	10,625	350	4,500
McNeil Coal Co.	MacGregor	......	5	......	51,316	51 316	12,100	200	......
Mesa Fuel Co.	Winger	......	......	2,813	......	2,813	950	......	......
Midwest Coal Co.	Midwest	......	2	2,928	15,128	18,056	750	......	2,500
Mingan, Mike	Kurtzville	......	......	1,466	......	1,466	375	......	......
Minnie Coal Co.	Minnie	......	......	675	......	675	......	300	......
Moffat Coal Co.	Oak Hills No. 1	......	4	103,034	37,316	140,350	21,000	......	15,920
Moffat Coal Co.	Oak Hills No. 2	......	3	109,931	24,002	133,933	19,950	......	15,124
Mountain View Coal Co.	Walden	1	1	......	8,042	8,042	3,250	250	......
Mt. Evans Fuel Co.	Mt. Evans	......	......	2,509	......	2,509	3,000	200	......
Mutual Coal Co.	Mutual	......	5	57,958	72,753	130 711	12.000	......	10,000
National Fuel Co.	Monarch No. 2	9	......	13,445	118.815	132,260	58,175	......	800
National Fuel Co.	Thor	......	2	32,804	28,760	61,564	......	......	4,217
National Fuel Co.	Puritan	13	4	2,218	269,240	271,458	109,200	......	......
Naturita Stores Co.	Cloverdale	......	......	888	......	888	800	150	......
New Castle Syndicate Co.	Allen No. 2	*	*	284	......	284	......	......	......
North Magnet Coal Co.	Magnet	......	......	671	......	671	1,050	600	......
North Park Coal Co.	Moore No. 1	......	......	47,776	......	47,776	30,000	1,000	......
North Park Coal Co.	Moore No. 2	......	......	2,747	......	2,747	2,500	125	......
Nossaman & Fowler	Pagosa	......	......	496	......	496	375	150	......
Oakdale Coal Co.	Oakdale	†	2	135,753	......	135.753	1 915	200	16,250
Ohio Creek Coal M. Co.	Ohio Creek	......	1	966	16,940	17,906	4,125	......	......
Ohkraut Mining Co.	Ohkraut	......	......	463	......	463	500	......	......

O. K. Coal Co.	O. K.			4,081		4,081	1,000	50	
Oliver Coal Co.	Oliver			1,000		1,000	1,625	400	100
Palisade Coal & Supply Co.	Palisade		1	10,251	8,000	18,251	2,500	150	
Paonia Farmer Coal Co.	Paonia			5,548		5,548	1,875		
Peacock Coal Co.	Peacock			2,403		2,403	750		
Pennington, O. W.	Midway			1,110		1,110			
Peoples Finance Coal Co.	Fox	5		10,975	3,000	13,975			
Petry, Samuel	Jack O'Lantern			1,099		1,099	200		
Pikes Peak Cons. Fuel Co.	Pikeview		7	69,853	147,881	217,734	75,625		
Pine Fuel Co.	Fawcett			1,046		1,046	200		
Postal Coal Co.	Postal	*	*	447		447			
Prairie Canon Coal Co.	Prairie Canon		2	9,635	366	10,001			5,000
Rankin Chas. H.	Star	*	*	480		480			
Rapini & Hughes	Placita			593		593			100
Rapson Coal M. Co.	Rapson	†	2	20,285		20,285			100
Rasmussen, H. J.	City			576		576		25	
Rauman Coal Co.	Rauman			1,539		1,539	250		
Red Ash Coal Co.	Red Ash			1,435		1,435	625		
Reynolds & Donnelly	Black Diamond			1,422		1,422	400		
Rifle Coal Co.	McLearn			1,379		1,379			900
Riley, J. D.	Riley			290		290	100		
Rio Blanco Coal Co.	Rio Blanco	*	*	225		225			
Riverside Coal Co.	Riverside			3,153		3,153		100	
Rocky Mountain Fuel Co.	Industrial		7	36,622	73,808	110,430	21,010		
Rocky Mountain Fuel Co.	Simpson	12		48,863	351	49,214	17,850		
Rocky Mountain Fuel Co.	Acme	9			34,669	34,669	14,677		669
Rocky Mountain Fuel Co.	Gorham	2		13,963	19,642	33,605	5,979		
Rocky Mountain Fuel Co.	Vulcan	7		1,556	18,156	19,712	4,250		1,274
Rocky Mountain Fuel Co.	Standard	8		51	4,612	4,663	590		
Rocky Mountain Fuel Co.	Alpine		1	21,907	6,565	28,472	6,350		
Rocky Mountain Fuel Co.	Forbes No. 9		6	49,481	7,491	56,972			4,891
Rocky Mountain Fuel Co.	Southwestern		1	28,275	4,556	32,831			4,896
Rocky Mountain Fuel Co.	La Belle	†	1	5,231		5,231			1,471
Rocky Mountain Fuel Co.	Columbine		8	31,658	340,584	372,242	118,775		37,800
Rocky Mountain Fuel Co.	Grant		5	1,809	88,656	90,465	27,900		
Rocky Mountain Fuel Co.	Frederick	4			12,209	12,209	3,849		
Ross Coal Co.	Horace			37,884		37,884	28,925	200	200
Routt County Coal Co.	Cozard	*	*	1,694		1,694			
Routt-Pinnacle Coal Co.	Routt-Pinnacle	†	2	9,740		9,740	3,750	500	
Royal Fuel Co.	Royal			167,832		167,832		505	1,297

TABLE No. 4—Continued

MINING MACHINES AND EXPLOSIVES USED AT COAL MINES IN THE STATE OF COLORADO FOR YEAR ENDED DECEMBER 31, 1923

Name of Operator	Name of Mine	Mining Machines		Coal Mined by (Short Tons)			Explosives Used (Pounds)		
		No. Operated by Compressed Air	No. Operated by Electricity	Hand	Machine	Total	Black Powder	Dynamite	Permissible Explosives
Royal Gorge Coal Co.	Royal Gorge			2,963		2,963	875		
Rudisill, O. C.	Butcher Knife			1,222		1,222	1,875		
Rugby Collieries Co.	Rugby			5,048		5,048			
Rush Coal Co.	Rush			1,144		1,144	300		
Russell, W. E. Coal Co.	Russell	9		5,090	60,000	65,090	19,875		
Seven Points Coal Co.	Seven Points			492		492	300		150
Shamrock Coal Co.	Crane			1,400		1,400	775	5	100
Shamrock Coal Co.	Shamrock		2		77,256	77,256	20,125		
Simpson, Joseph	Marr			1,473		1,473	2,500		
Solar Coal Co.	Solar	*	*	1,630		1,630			
South Canon M. L. Co.	South Canon			6,914		6,914			13,000
Square Deal Fuel Co.	Square Deal			1,990		1,990			
Stanley Mine Co.	Stanley			24,214		24,214			4,000
States Coal Co.	States			2,174		2,174	725		
Stillwagon, J. W.	Old Coalby			737		737	300		
Stokes, W. D.	Stokes			4,633		4,633	5,000	500	
Sulphur Coal Co.	Sulphur			125		125	300		
Sumner, L.	Cowan			733		733			
Sunnyside Coal M. Co.	Sunnyside		5	1,909	43,710	45,619	20,800	300	200
Sunshine Coal Co.	Sunshine			11,343		11,343	2,500		
Temple Fuel Co.	Brodhead No. 9		7	10,165	91,481	101,646			11,850
Thomas Coal Co.	Thomas			1,750		1,750	3,650		
Three Pines Coal Co.	Three Pines			56,861		56,861			12,450
Tipotsch, Frank	Tipotsch			1,079		1,079	150		

Triangle Coal Co.	Triangle	*	*	434	......	434	......	......	......
Trinidad Coal Co.	Baldy Mt.	......	......	2,255	......	2,255	......	......	70
Union Coal & Coke Co.	Pryor	......	4	35,727	19,000	54,727	......	50	4,030
United Collieries Co.	Monroe	3	......	......	22,144	22,144	4,375	......	......
Utah Fuel Co.	Somerset	......	......	267,571	......	267,571	......	11,600	27,050
Vesta Mines Inc.	Vesta	......	3	3,468	10,004	13,472	4,975	......	450
Vezzetti & Moschetti	Brookside	......	1	......	18,808	18,808	2,125	50	......
Vickers Coal Co.	Vickers	......	2	1,662	5,500	7,162	......	......	1,000
Victor-American Fuel Co.	Chandler	......	10	393	122,061	122,454	11,400	......	20,262
Victor-American Fuel Co.	Radiant	......	4	7,294	46,810	54,104	41,925	21	1,426
Victor-American Fuel Co.	Ravenwood	......	6	14,867	51,625	66,492	......	......	7,985
Victor-American Fuel Co.	Delagua	......	8	276,195	98,848	375,043	......	300	15,057
Victor-American Fuel Co.	Cass	......	7	15,100	120,729	135,829	......	......	15,156
Victor-American Fuel Co.	Hastings	......	2	3,443	3,606	7,049	......	......	1,278
Victor-American Fuel Co.	Pinnacle	......	4	68,919	8,146	77,065	41,525	......	695
Victor-American Fuel Co.	Wadge	......	4	8,462	28,192	36,654	19,000	......	266
White River Lumber Co.	Lion Canon	......	......	1,470	......	1,470	1,500	......	100
Williamsburg Coal Co.	Williamsburg	*	*	826	......	826	......	......	......
Willie Coal Co.	Willie	......	......	1,297	......	1,297	1,350	50	......
Wilton Coal Co.	Pritchard	......	......	2,739	......	2,739	......	......	50
Winton Coal Co.	Winton	......	......	433	......	433	750	......	......
Wright, Claude	Fairview	......	......	90	......	90	150	......	......
Wyoming & Colorado Coal Co.	Rainbow	*	*	8,534	......	8,534	......	......	......
Yampa Coal Co	Yampa	......	......	11,755	......	11,755	......	......	......
Young & Caddell	Young	*	*	2,225	......	2,225	......	......	......
Totals		169	297	5,493,066	4,843,669	10,336,735	1,610,164	35,409	865,633

* No report.

† Not in use.

‡ Not given.

TABLE No. 6

PRODUCTION AND DISTRIBUTION OF COAL FROM ALL THE MINES IN THE STATE OF COLORADO FOR THE YEAR ENDING DECEMBER 31, 1923.

Total Production Distributed	Loaded at Mines for Shipment	Sold to Local Trade and Used by Employees	Used at Mines for Steam and Heat	Coal Made Into Coke	Coke Made
10,336,735	8,594,418	436,335	237,628	1,068,354	648,851

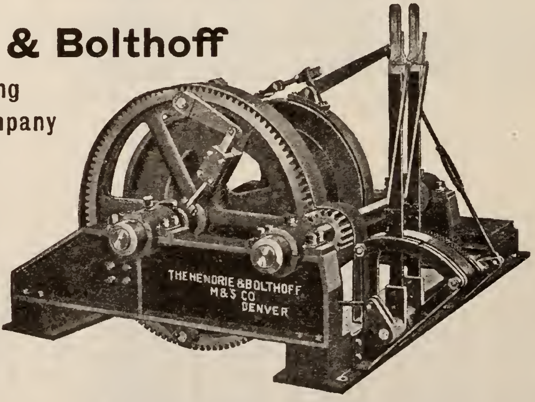
TABLE No. 5

Table No. 5 omitted. Applies to metal mining.

Modern Coal Mine
Equipment and Supplies

Electric Vulcan Hoists *Danville Steam Hoists*
Carbic Carbide *Manistee Electric Pumps*
Wolf's Safety Mine Lamps

Hendrie & Bolthoff
Manufacturing
and Supply Company
Denver



General Supplies and Equipment

TABLE No. 7

NUMBER INJURED IN COAL MINES DURING THE CALENDAR YEAR ENDED DECEMBER 31, 1923

CAUSES	Permanent Total Disability	Permanent Partial Disability	Temporary Disability		Total Injuries
			Time Lost More Than 14 Days	Time Lost Less Than 14 Days	
Underground—					
1. Falls of roof (coal, rock, etc.)	....	6	250	203	459
2. Falls of face or pillar coal	1	....	67	30	98
3. Mine cars and locomotives	1	4	217	124	346
4. Gas explosions and burning gas	....	....	8	7	15
5. Coal-dust explosions (including gas and dust combined)	....	....	3	1	4
6. Explosives	....	1	11	9	21
7. Suffocation from mine gas	....	....	9	5	14
8. Electricity	....	....	3	4	7
9. Animals	....	....	17	21	38
10. Mining machines	....	1	31	29	61
11. Mines fires (burned, suffocated, etc.)	....	....	....	....	....
12. Other causes	....	9	191	275	475
In Shaft—					
13. Falling down shafts or slopes	....	....	2	....	2
14. Objects falling down shafts or slopes	....	....	3	1	4
15. Cages or skips	....	....	....	1	1
16. Other causes	....	1	2	3	6
Total number injured in mine	2	22	814	713	1,551
On Surface—					
17. Mine cars and mine locomotives	....	....	12	12	25
18. Electricity	....	....	....	1	1
19. Machinery	....	....	15	16	31
20. Boiler explosions or bursting steam pipes	....	....	2	2	4
21. Railway cars and locomotives	....	1	5	7	13
22. Other causes	....	1	22	31	54
Total number injured on the surface	....	3	56	69	128
GRAND TOTAL	2	25	870	782	1,679

A. PERMANENT TOTAL DISABILITY. Loss of both legs or arms, one leg and one arm, total loss of eyesight, paralysis or other condition permanently incapacitating workman from doing any work of a gainful occupation.

B. PERMANENT PARTIAL DISABILITY. Loss of one foot, leg, hand, eye, one or more fingers, one or more toes, and dislocation where ligaments are severed, or any other injury known in surgery to be permanent partial disability.

C. In this column include only accidents which cause a loss of time more than the balance of the day or shift upon which the accident occurred.

TABLE No. 8

COAL MINE FATALITIES IN THE STATE OF COLORADO, CLASSIFIED BY CAUSE AND OCCUPATION, FOR YEAR ENDED DECEMBER 31, 1923.

CAUSES	UNDERGROUND AND SHAFT																Surface Fatalities	Total Fatalities
	Foreman	Assistant Foreman	Fire Bosses	Pick Miners	Machine Miners	Machine Runners and Scrapers	Shot Firers	Drivers and Runners	Motormen and Assistants	Doorboys and Helpers	Trackmen and Bratticemen	Timbermen and Rockmen	Pump and Pipemen	Electricians	and Helpers All Others	Total Underground		
Underground—																		
1. Falls of roof (coal, rock, etc.)	......	......	......	20	4	2	......	1	......	......	......	......	......	......	......	27	......	......
2. Falls of face or pillar coal	......	......	......	2	1	......	......	......	......	......	......	......	......	......	......	3	......	......
3. Mine cars and locomotives	......	1	......	1	1	......	......	2	......	......	......	1	......	......	2	8	......	......
4. Gas explosions and burning gas	......	......	......	1	......	......	......	......	......	......	......	......	......	......	......	1	......	......
5. Coal-dust explosions (including gas and dust combined)	1	......	......	9	5	......	......	......	......	......	......	1	......	......	......	16	......	......
6. Explosives	......	......	......	1	1	......	1	......	......	......	......	......	......	......	......	3	......	......
7. Suffocation from mine gases	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
8. Electricity (shock or burns)	......	......	......	......	2	......	......	......	......	......	......	......	......	......	......	2	......	......
9. Animals	......	......	1	......	......	......	......	......	......	......	......	......	......	......	......	1	......	......
10. Mining machines	......	......	......	......	1	......	......	......	......	......	......	......	......	......	......	1	......	......
11. Mine fires (burned, suffocated, etc.)	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
12. Other causes	......	......	......	1	......	......	......	......	......	......	......	......	......	......	......	1	......	......
Shaft—																		
13. Falling down shafts or slopes	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
14. Objects falling down shafts or slopes	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
15. Cages or skips	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
16. Other causes	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Total underground	1	1	1	35	15	2	1	3	......	......	......	2	......	......	2	63	......	......

Surface—																		
17. Mine cars and mine locomotives	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
18. Electricity (shock or burns)	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
19. Machinery	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
20. Boiler explosions or bursting steam pipes	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
21. Railway cars and locomotives	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
22. Other causes	......	......	......	......	......	......	......	......	......	......	......	......	......	......	3	......	3	......
Grand total	1	1	1	35	15	2	1	938	259	92	364	388	120	121	452	12,287	......	......
Number employed in each occupation (a)	204	63	162	4,932	3,499	512	171	3	......	......	......	4	......	......	5	63	3	66

(a) To be supplied from Table 10.

For 40 years

The Colorado Fuel & Iron Company

(*A Western Industry*)

HAS SUPPLIED A LARGE PROPORTION OF THE

MINE RAILS
TRACK SPIKES
TRACK BOLTS
MERCHANT BARS
STEEL ANGLES
and
REINFORCING BARS

USED BY MINE OPERATORS IN THE ROCKY MOUNTAIN REGION

OTHER PRODUCTS INCLUDE

CAST IRON PIPE
WIRE
BARBED WIRE
WOVEN WIRE FENCING
FIELD FENCING
NAILS
SPIKES
BALE TIES
ETC.

General Offices, Denver, Colorado
Steel Plant, Pueblo, Colorado

T. AURELIUS
Manager Sales
Steel Division, Denver, Colorado

TABLE No. 10

COAL MINE EMPLOYEES CLASSIFIED BY OCCUPATION IN THE STATE OF COLORADO DURING YEAR ENDED DECEMBER 31, 1923.

UNDERGROUND	Employed in and Around the Mines of Colorado
1. Foremen	204
2. Assistant foremen	63
3. Fire bosses	162
4. Pick miners	4,932
5. Machine miners	3,499
6. Machine runners and scrapers	512
7. Shot firers	171
8. Drivers and runners	938
9. Motormen and assistants	259
10. Doorboys and helpers	92
11. Trackmen and bratticemen	364
12. Timbermen and rockmen	388
13. Pumpmen and pipemen	120
14. Electricians and helpers	121
15. All others	452
Total underground	12,287
SURFACE	
1. Superintendents	139
2. Foremen	64
3. Blacksmiths and carpenters	236
4. Engineers and firemen	308
5. Machinists and helpers	97
6. Trackmen and helpers	59
7. All others at mine	1,214
8. Coke-oven employes	246
9. Office employees	135
Total surface	2,498
Total employees	14,785
Number of days men worked during year	169.9

Table No. 9 omitted, is covered by Table No. 8. Applies to Metal Mining. Above poll taken in December, 1923.

TABLE A—1923

SHOWING BY COMPANIES: TOTAL NUMBER OF TONS PRODUCED AND NUMBER OF MEN EMPLOYED; NUMBER OF FATAL ACCIDENTS; NUMBER OF MEN EMPLOYED PER FATAL ACCIDENT AND NUMBER OF TONS PRODUCED PER FATAL ACCIDENT; NUMBER OF NON-FATAL ACCIDENTS; NUMBER OF MEN EMPLOYED PER NON-FATAL ACCIDENT AND NUMBER OF TONS PRODUCED PER NON-FATAL ACCIDENT; NUMBER KILLED PER 1,000 EMPLOYED AND NUMBER OF MEN INJURED PER 1,000 EMPLOYED.

COMPANIES	Total Production	Number of Men Employed	Number of Fatal Accidents	Number of Men Employed per Fatal Accident	Number of Tons Produced per Fatal Accident	Number of Non-Fatal Accidents	No. of Men Employed per Non-Fatal Accident	Number of Tons Produced per Non-Fatal Accident	Killed per 1,000 Employed	Injured per 1,000 Employed
Ajax Coal Mining Co.	24,725	37	......	......	......	1	37.0	24,725	......	27.0
Alamo Coal Co.	3,341	55	3	18.3	1,114	15	3.7	223	54.5	272.7
Altitude Coal Co.	7,478	13	......	......	......	......	......	......	......	......
American Smelting & Refining Co	251,902	253	3	84.3	83,967	23	11.0	10,952	11.9	90.9
Anchor Coal Co.	1,150	2	......	......	......	......	......	......	......	......
Arnold & Shaklee	925	11	......	......	......	......	......	......	......	......
Axial Basin Development Co.	171	1	......	......	......	......	......	......	......	......
Aztec Coal Mining Co.	41,230	65	......	......	......	3	21.7	13,743	......	46.2
Baldwin Fuel Co.	6,311	6	......	......	......	......	......	......	......	......
Barker, Wright	991	2	......	......	......	......	......	......	......	......
Baudino & Co.	4,998	5	......	......	......	1	5.0	4,998	......	200.0
Bear Canon Coal Co.	88,377	164	......	......	......	10	16.4	8,838	......	61.0
Bear River Coal Co.	33,650	53	......	......	......	1	53.0	33,650	......	18.9
Bedlien, Geo.	1,368	3	......	......	......	......	......	......	......	......
Bell Mining Co.	36,469	26	......	......	......	4	6.5	9,117	......	153.8
Bell & Stout	751	2	......	......	......	......	......	......	......	......
Berry, Chas. T.	565	2	......	......	......	......	......	......	......	......
Big Five Coal Co.	1,984	4	......	......	......	......	......	......	......	......
Big Four Coal & Coke Co.	98,346	119	1	119.0	98,346	5	23.8	19,669	8.4	42.0
Black Canon Coal & Fuel Co.	13,360	31	......	......	......	......	......	......	......	......
Black Hawk Coal Co.	2,494	36	......	......	......	1	36.0	2,494	......	27.8
Black Hills Coal Co.	1,400	3	......	......	......	......	......	......	......	......
Bluff Springs Coal Co.	11,526	19	......	......	......	......	......	......	......	......
Boaglio Coal Co.	1,895	2	......	......	......	......	......	......	......	......

Book Cliff Coal Co.	3,541	9				2	4.5	1,771		222.2
Boulder Coal Mining Co.	10,098	24				2	12 0	5,049		83.3
Boluder Valley Coal Co.	88 427	100				12	8.3	7,369		120.0
Bracken & Cozza	1,184	3								
Brennan Coal Mining Co.	36,557	57				2	28.5	18,278		35.1
Brewster Independent Coal Co.	4,323	10								
Brown, Thos. Coal Co.	1,910	3								
Caddell & Son	36,690	36	2	18.0	18,345	11	3.3	3,335	55.6	305.6
Calumet Fuel Co.	255,942	244				21	11.6	12,188		86.1
Canon District Coal Co.	4,248	16								
Canon-Reliance Coal Co.	111,015	190	1	190.0	111,015	34	5.6	3,265	5.3	178.9
Cedar Hill Coal & Coke Co.	16,195	32				7	4.6	2,314		218.8
Champion Coal Mining Co	5,599	9								
Chew, J. S.	168	1								
Christensen Coal Co.	3,781	10								
Clayton Coal Co.	193,502	131				10	13.1	19,350		76.3
Collier Coal Co.	340	1								
Colorado Canon Coal Co.	2,469	8								
Colorado Fuel Co.	3,569	15				1	15.0	3,569		66.7
Colorado Fuel & Iron Co.	3,030,517	3,754	14	268.1	216,466	513	7.3	5,907	3.7	136.7
Colorado Lumber & Investment Co.	33 308	53	1	53.0	33,308	9	5.9	3,701	18.9	169.8
Colorado Springs Co.	59,634	55				18	3.1	3,313		327.3
Colorado & Utah Coal Co.	210,308	224	1	224.0	210,308	18	12.4	11,684	4.5	80.4
Consolidated Coal & Coke Co.	131,531	97				13	7.5	10,118		134.0
Converse, Frank	1,339	2								
Co-operative Fuel Co.	1,108	20								
Corley, W. D.	20,365	23				1	23.0	20,365		43.5
Cornwell, J. V.	760	2								
Corra, John	650	3								
Cortez Coal Co.	1,706	5								
Cottonwood Coal Co.	1,145	2								
Cracker Jack Coal Co.	8,810	7								
Crested Butte Anthracite Mining Co.	16,692	36	1	36.0	16,692	3	12.0	5,564	27.8	83.3
Crested Butte Coal Co.	23,066	29				2	14.5	11,533		69.0
Crown Fuel Co.	52,051	69				3	23.0	17,350		43.5
Cuchara Canon Coal Co.	6,093	26	1	26.0	6,093	2	13.0	3,047	38.5	76.9
Danville Coal Co.	4,305	5								
Davies Coal Co.	1,075	1								
De Graffenried, J. R.	250	1								

TABLE A—Continued

COMPANIES	Total Production	Number of Men Employed	Number of Fatal Accidents	Number of Men Employed per Fatal Accident	Number of Tons Produced per Fatal Accident	Number of Non-Fatal Accidents	No. of Men Employed per Non-Fatal Accident	Number of Tons Produced per Non-Fatal Accident	Killed per 1,000 Employed	Injured per 1,000 Employed
Delta Coal Co.	2,419	3								
Dick Coal Co.	27,680	40				2	20.0	13,840		50.0
Donald Coal Co.	1,499	3								
Double Dick Coal Co.	7,711	11				2	5.5	3,856		181.8
Drennan Coal Co.	1,282	2								
Drott, John H.	499	1								
Edgell, T. E.	100	1								
Empire Coal Mining Co.	73,175	103	1	103.0	73,175	6	17.2	12,196	9.7	58.3
Enrietta & Co.	331	1								
Estes, Frank	325	2								
Fairfield, E. F.	172	2								
Fairview Coal Co.	600	3								
Farmer-Mutual Coal Co.	980	3				1	3.0	980		333.3
Florida Grange	144	1								
Fort Lupton Coal Co.	5,216	9	1	9.0	5,216	1	9.0	5,216	111.1	111.1
Freeman, J. R.	824	2								
French & Fielding	2,147	3				1	3.0	2,147		333.3
Fruth & Stone	9,435	27				1	27.0	9.435		37.0
Galloway, John R.	109	1								
Gilson Asphaltum Co.	11,058	9								
Golden Dawn Coal Co.	1,980	4								
Good Coal Co.	930	2								
Gordon Coal Co.	67,084	90				6	15.0	11,181		66.7
Grand Junction Mining & Fuel Co.	206,452	191	1	191.0	206,452	27	7.1	7,646	5.2	141.4
Green Valley Coal Co.	5,038	5								
Griffith Coal Co.	5,311	7								
Hall, A. W. & Son	4,934	6								
Happy Canon Coal Co.	600	6				1	6.0	600		166.7
Hawkes Garage	210	1								

Hayden Bros. Coal Corp.	57,417	101	....	....	....	11	9.2	5,220	....	108.9
Hayden Valley Mutual Coal Co.	2,675	6	....	....	....	....	....	....	....	....
Hidden Treasurer Mining Co.	1,208	2	....	....	....	....	....	....	....	....
Huerfano Coal Co.	53,030	116	....	....	....	17	6.8	3,119	....	146.6
Hunter, J. B.	236	1	....	....	....	....	....	....	....	....
Independent Coal Co.	733	2	....	....	....	....	....	....	....	....
International Fuel Corp.	132,700	168	....	....	....	34	4.9	3,903	....	202.4
Investors Securities Co.	2,010	6	....	....	....	1	6.0	2,010	....	166.7
Irons, Wm. Jr.	2,251	3	....	....	....	....	....	....	....	....
Jeffryes Fuel Co.	6,158	16	....	....	....	1	16.0	6,158	....	62.5
Jewel Collieries Co.	40,657	54	....	....	....	4	13.5	10,164	....	74.1
Joerger Fuel Co.	1,794	2	....	....	....	....	....	....	....	....
Juanita Coal & Coke Co.	80,727	65	....	....	....	9	7.2	8,970	....	138.5
July Coal Co.	361	2	....	....	....	....	....	....	....	....
Keota Coal Co.	160	3	....	....	....	....	....	....	....	....
Keystone Mining Co.	45,290	42	1	42.0	45,290	4	10.5	11,322	23.8	95.2
Kotala, Ludvik	199	2	....	....	....	....	....	....	....	....
La Veta Coal Co.	1,044	5	....	....	....	....	....	....	....	....
Leyden Coal Co.	150,007	168	....	....	....	17	9.9	8,824	....	101.2
Liberty Coal Co.	2,039	13	....	....	....	....	....	....	....	....
Liberty Coal & Mercantile Co.	1,137	2	....	....	....	2	1.0	569	....	1000.0
Malone & Dennis	392	1	....	....	....	....	....	....	....	....
Marchetti, J. R.	2,856	2	....	....	....	1	2.0	2,856	....	500.0
Marsh, R.	525	2	....	....	....	....	....	....	....	....
Mattivi & Son	3,000	20	....	....	....	1	20.0	3,000	....	50.0
McGinley, Wm.	664	2	....	....	....	....	....	....	....	....
McKee, Robert	200	2	....	....	....	....	....	....	....	....
McLendon, O. K.	1,485	3	....	....	....	....	....	....	....	....
McMillin Bros.	1,599	3	....	....	....	....	....	....	....	....
McNally & Thompson	40,066	76	....	....	....	6	12.7	6,678	....	78.9
McNeil Coal Co.	51,316	66	....	....	....	4	16.5	12,829	....	60.6
Mesa Fuel Co.	2,813	4	....	....	....	....	....	....	....	....
Midwest Coal Co.	18 056	35	6	5.8	3,009	8	4.4	2,257	171.4	228.6
Mingan, Mike	1,466	2	....	....	....	....	....	....	....	....
Minnie Coal Co.	675	3	....	....	....	....	....	....	....	....
Moffat Coal Co.	274,283	351	2	175.5	137,142	41	8.6	6,690	5.7	116.8
Mountain View Coal Co.	8,042	14	....	....	....	....	....	....	....	....
Mt. Evans Fuel Co.	2,509	5	....	....	....	....	....	....	....	....
Mutual Coal Co.	130,711	149	2	74.5	65,356	46	3.2	2,841	13.4	308.7

TABLE A—Continued

COMPANIES	Total Production	Number of Men Employed	Number of Fatal Accidents	Number of Men Employed per Fatal Accident	Number of Tons Produced per Fatal Accident	Number of Non-Fatal Accidents	No. of Men Employed per Non-Fatal Accident	Number of Tons Produced per Non-Fatal Accident	Killed per 1 000 Employed	Injured per 1,000 Employed
National Fuel Co.	465,282	474	1	474.0	465,282	78	6.1	5,965	2.1	164.6
Naturita Stores Co.	888	2								
New Castle Syndicate Co.	284	10								
North Magnet Coal Co.	671	4								
North Park Coal Co.	50,523	55				8	6.9	6,315		145.5
Nossaman & Fowler	496	2								
Oakdale Coal Co.	135,753	156	1	156.0	135,753	5	31.2	27,151	6.4	32.1
Ohio Creek Coal Mining Co.	17,906	29				1	29.0	17,906		34.5
Ohkraut Coal Mining Co.	463	2								
O. K. Coal Co.	4,081	8								
Oliver Coal Co.	1,900	13								
Palisade Coal & Supply Co.	18,251	34				1	34.0	18,251		29.4
Paonia-Farmer Coal Co.	5,548	6								
Peacock Coal Co.	2,403	6								
Pennington, O. W.	1,110	2								
Peoples Finance Coal Co.	13,975	33				1	33.0	13,975		30.3
Petry, Samuel	1 099	3								
Pikes Peak Consolidated Fuel Co.	217,734	174	1	174.0	217,734	3	58.0	72,578	5.7	17.2
Pine Fuel Co.	1,046	3								
Postal Coal Co.	447	8								
Prairie Canon Coal Co.	10,001	30				3	10.0	3,334		100.0
Rankin, Chas H.	480	12								
Rapini & Hughes	593	4	1	4.0	593				250.0	
Rapson Coal Mining Co.	20,285	40				6	6.7	3,381		150.0
Rasmussen, H. J.	576	2								
Rauman Coal Co.	1,539	4								
Red Ash Coal Co.	1,435	3								
Reynolds & Donnelly	1,422	2								
Rifle Coal Co.	1,379	3								

Riley, J. D.	290	2								
Rio Blanco Coal Co.	225	2								
Riverside Coal Co.	3,153	6								
Rocky Mountain Fuel Co.	850,715	971	11	88.3	77,338	182	5.3	4,674	11.3	187.4
Ross Coal Co.	37,884	68	1	68.0	37,884	2	34.0	18,942	14.7	29.4
Routt County Coal Co.	1,694	6								
Routt-Pinnacle Coal Co.	9,740	28				3	9.3	3,247		107.1
Royal Fuel Co.	167,832	256				10	25.6	16,783		39.1
Royal Gorge Coal Co.	2,963	7				1	7.0	2,963		142.9
Rudisill, C. O.	1,222	4								
Rugby Collieries Co.	5,048	24	1	24.0	5,048				41.7	
Rush Coal Co.	1,144	3								
Russell, W. E. Coal Co.	65,090	74				5	14.8	13,018		67.6
Seven Points Coal Co.	492	1								
Shamrock Coal Co. (Archuleta County)	1,400	2								
Shamrock Coal Co. (Weld County)	77,256	50				5	10.0	15,451		100.0
Simpson, Joseph	1,473	3								
Solar Coal Co.	1,630	14								
South Canon Mine Leasing Co.	6,914	7								
Square Deal Fuel Co.	1,990	4				1	4.0	1,990		250.0
Stanley Mine Co.	24,214	43								
States Coal Co.	2,174	2								
Stillwagon, J. W.	737	1								
Stokes, W. D.	4,633	9				1	9.0	4,633		111.1
Sulphur Coal Co.	125	3								
Sumner, L.	733	6								
Sunnyside Coal Mining Co.	45,619	71				1	71.0	45,619		14.1
Sunshine Coal Co.	11,343	11								
Temple Fuel Co.	101,646	181	1	185.0	101,646	4	46.2	25,412	5.4	21.6
Thomas Coal Co.	1,750	3								
Three Pines Coal Co.	56,861	83				7	11.9	8,123		84.3
Tipotsch, Frank	1,079	2								
Triangle Coal Co.	434	3								
Trinidad Coal Co.	2,255	4								
Union Coal & Coke Co.	54,727	89				4	22.2	13,682		44.9
United Collieries Co.	22,144	26				10	2.6	2,214		384.6
Utah Fuel Co.	267,571	218	2	109.0	133,786	28	7.8	9,556	9.2	128.4
Vesta Mines, Inc.	13,472	39				2	19.5	6,736		51.3
Vezzetti & Moschetti	18,808	11				1	11.0	18,808		90.9

TABLE A—Continued

COMPANIES	Total Production	Number of Men Employed	Number of Fatal Accidents	Number of Men Employed per Fatal Accident	Number of Tons Produced per Fatal Accident	Number of Non-Fatal Accidents	No. of Men Employed per Non-Fatal Accident	Number of Tons Produced per Non-Fatal Accident	Killed per 1,000 Employed	Injured per 1,000 Employed
Vickers Coal Co.	7,162	23	....	....	....	1	23.0	7,162	....	43.5
Victor-American Fuel Co.	874,690	1,417	3	472.3	291,563	302	4.7	2,896	2.1	213.1
White River Lumber Co.	1,470	2	....	....	....	....	....	....	....	....
Williamsburg Coal Co.	826	6	....	....	....	....	....	....	....	....
Willie Coal Co.	1,297	3	....	....	....	....	....	....	....	....
Wilton Coal Co.	2,739	4	....	....	....	....	....	....	....	....
Winton Coal Co.	433	3	....	....	....	....	....	....	....	....
Woodward, John	*	....	1	....	....	....	....	....	....	....
Wright, Claude M.	90	1	....	....	....	....	....	....	....	....
Wyoming & Colorado Coal Co.	8,534	36	....	....	....	....	....	....	....	....
Yampa Coal Co.	11,755	25	....	....	....	....	....	....	....	....
Young & Caddell	2,225	7	....	....	....	....	....	....	....	....
Totals of the State of Colorado	10,336,735	13,277	66	201.2	156,617	1,679	7.9	6,156	4.97	126.46

* No report.

TABLE B

SHOWING BY COUNTIES, MINES OPERATED, NAME OF OPERATOR AND ADDRESS OF MINE, CHARACTER OF COAL, NUMBER OF DAYS WORKED, AVERAGE NUMBER OF MEN EMPLOYED, TOTAL NUMBER OF TONS OF COAL PRODUCED IN 1923, AND CAPACITY OF MINE PER DAY IN TONS.

ARCHULETA COUNTY

Name of Mine	Name of Company	Mine Post Office	Character of Coal	Number of Days Worked	Average No. of Men Employed	Total Number of Tons Produced	Capacity of Mine Per Day, Tons
Crane	Shamrock Coal Co.	Bayfield	Sub-bituminous	210	2	1,400	10
Pagosa	Nossaman & Fowler	Pagosa Springs	Sub-bituminous	259	2	496	
Total—Number	of Mines Operated: 2			234.5	4	1.896	

BOULDER COUNTY

Name of Mine	Name of Company	Mine Post Office	Character of Coal	Number of Days Worked	Average No. of Men Employed	Total Number of Tons Produced	Capacity of Mine Per Day, Tons
Industrial	Rocky Mountain Fuel Co	Superior	Sub-bituminous	169.8	126	110,430	800
Simpson	Rocky Mountain Fuel Co	Lafayette	Sub-bituminous	169.7	30	49,214	600
Acme	Rocky Mountain Fuel Co	Louisville	Sub-bituminous	135.3	61	34,669	300
Gorham	Rocky Mountain Fuel Co	Gorham	Sub-bituminous	208	25	33,605	200
Vulcan	Rocky Mountain Fuel Co	Lafayette	Sub-bituminous	108.4	32	19,712	300
Standard	Rocky Mountain Fuel Co	Lafayette	Sub-bituminous	16	13	4,663	250
Monarch No. 2	National Fuel Co.	Broomfield	Sub-bituminous	220.5	175	132,260	1,000
Centennial	Big Four Coal & Coke Co.	Louisville	Sub-bituminous	134	119	98,346	900
Crown	Crown Fuel Co.	Gorham	Sub-bituminous	182	69	52,051	600
Capitol	Ajax Coal M. Co.	Louisville	Sub-bituminous	172	37	24,725	100
Champion	International Fuel Corp.	Louisville	Sub-bituminous	94.8	60	19,679	400
Nonpareil	Colorado Lumber & Inv. Co.	Louisville	Sub-bituminous	188	21	15,405	150
Fox	Peoples Finance Coal Co.	Gorham	Sub-bituminous	151	33	13,975	500
Black Diamond	Boulder Coal M. Co.	Boulder	Sub-bituminous	147	24	10,098	110
Cracker Jack	Cracker Jack Coal Co.	Boulder	Sub-bituminous	211	7	8,810	
Square Deal	Square Deal Fuel Co.	Gorham	Sub-bituminous	165	4	1,990	
Gorham No. 2	Donald Coal Co.	Gorham	Sub-bituminous	210	3	1,499	10
Red Ash	Red Ash Coal Co	Gorham	Sub-bituminous	202	3	1,435	
Blue Goose	Big Five Coal Co.	Lafayette	Sub-bituminous	263	4	1,984	
Cambro	Co-operative Fuel Co.	Lafayette	Sub-bituminous	19	20	1,108	
Lewis	Davies Coal Co.	Gorham	Sub-bituminous	196.5	1	1,075	25
Total—Number	of Mines Operated: 21			161.7	867	636,733	

TABLE B—Continued

DELTA COUNTY

Name of Mine	Name of Company	Mine Post Office	Character of Coal	Number of Days Worked	Average No. of Men Employed	Total Number of Tons Produced	Capacity of Mine Per Day, Tons
King	Juanita Coal & Coke Co.	Bowie	Bituminous	126	65	80,727	1,000
Paonia	Paonia-Farmer Coal Co.	Paonia	Bituminous	162	6	5,548	60
Green Valley	Green Valley Coal Co.	Cedaredge	Bituminous	252	5	5,038	40
Red Mountain	A. W. Hall & Son	Cedaredge	Semi-bituminous	223	6	4,934	30
Red Canon	Delta Coal Co.	Cedaredge	Semi-bituminous	244	3	2,419	....
States	States Coal Co.	Cedaredge	Semi-bituminous	253	2	2,174	30
Rollins	McMillin Bros.	Delta	Semi-bituminous	173	3	1,599	....
Kurtzville	Mike Mingan	Hotchkiss	Semi-bituminous	180	2	1,466	3
Converse	Frank Converse	Paonia	Bituminous	185	2	1,339	30
Old Coalby	J. W. Stillwagon	Cedaredge	Semi-bituminous	159	1	737	....
Cowan (North Fork)	L. Sumner	Paonia	Bituminous	93	6	733	....
Independent	Independent Coal Co.	Cedaredge	Semi-bituminous	123	2	733	20
Berry	Chas. T. Berry	Paonia	Bituminous	65	2	565	20
Winton	Winton Coal Co.	Austin	Semi-bituminous	166	3	433	....
De Graffenried	J. R. De Graffenried	Hotchkiss	Semi-bituminous	100	1	250	....
Fairview	Claude M. Wright	Delta	Semi-bituminous	60	1	90	25
Total—Number	of Mines Operated: 16	....	....	145.4	110	108,785	....

ELBERT COUNTY

Name of Mine	Name of Company	Mine Post Office	Character of Coal	Number of Days Worked	Average No. of Men Employed	Total Number of Tons Produced	Capacity of Mine Per Day, Tons
Security (White Ash)	Investors Securities Co.	Matheson	Sub-bituminous	228	6	2,010	100
Wright	Wright Barker	Matheson	Sub-bituminous	179	2	991	35
Total—Number	of Mines Operated: 2	....	....	215.8	8	3,001	....

EL PASO COUNTY

Pikeview	Pikes Peak Cons. Fuel Co.	Pikeview	Sub-bituminous	164	174	217,734	1,400
Keystone	Keystone Mining Co.	Colorado Springs	Sub-bituminous	199	42	45,290	300
City	Colorado Springs Co.	Colorado Springs	Sub-bituminous	235	55	59,634	400
Patterson	W. D. Corley	Colorado Springs	Sub-bituminous	232	20	19,349	200
Franceville	W. D. Corley	Colorado Springs	Sub-bituminous	125	3	1,016	....
Altitude	Altitude Coal Co.	Colorado Springs	Sub-bituminous	228	13	7,478	50
Danville	Danville Coal Co.	Colorado Springs	Sub-bituminous	301	5	4,305	20
Golden Dawn	Golden Dawn Coal Co.	Rush	Sub-bituminous	209	4	1,980	15
Drennan	Drennan Coal Co.	Colorado Springs	Sub-bituminous	204	2	1,282	....
Cottonwood	Cottonwood Coal Co.	Colorado Springs	Sub-bituminous	201	2	1,145	7
Rush	Rush Coal Co.	Rush	Sub-bituminous	167	3	1,144	12
Total—Number	of Mines Operated: 11			190.2	323	360,357	....

FREMONT COUNTY

Coal Creek	Colorado Fuel & Iron Co.	Rockvale	Semi-bituminous	118.5	159	87,755	800
Rockvale	Colorado Fuel & Iron Co.	Rockvale	Semi-bituminous	118.3	181	75,123	900
Fremont	Colorado Fuel & Iron Co.	Florence	Semi-bituminous	99.6	146	69,371	700
Nonac	Colorado Fuel & Iron Co.	Canon City	Semi-bituminous	269	34	33,132	150
Emerald	Colorado Fuel & Iron Co.	Florence	Semi-bituminous	106.5	42	18,184	300
Chandler	Victor-American Fuel Co.	Chandler	Semi-bituminous	185.8	206	122,454	1,000
Radiant	Victor-American Fuel Co.	Pyrolite	Semi-bituminous	153.6	108	54,104	500
Canon	Canon-Reliance Coal Co.	Canon City	Semi-bituminous	254	132	80,512	700
Brookside	Vezzetti & Moschetti	Canon City	Semi-bituminous	249.2	11	18,808	75
Bluff Springs	Bluff Springs Coal Co.	Florence	Semi-bituminous	256	19	11,526	50
Walden	Mountain View Coal Co.	Coal Creek	Semi-bituminous	192	14	8,042	75
Double Dick	Double Dick Coal Co.	Coal Creek	Semi-bituminous	237	11	7,711	....
Griffiths	Griffiths Coal Co.	Canon City	Semi-bituminous	144.2	7	5,311	35
Brewster	Brewster Independent Coal Co.	Florence	Semi-bituminous	283.5	10	4,323	20
Florence-Canon	Canon District Coal Co.	Canon City	Semi-bituminous	228	16	4,248	20
Royal Gorge	Royal Gorge Coal Co.	Canon City	Semi-bituminous	127	7	2,963	....
Newlin	Colorado Canon Coal Co.	Florence	Semi-bituminous	172	8	2,469	20
Mohawk	Black Hawk Coal Co.	Canon City	Semi-bituminous	238	10	2,292	....
Willie	Willie Coal Co.	Florence	Semi-bituminous	132	3	1,297	....
Jack O'Lantern	Samuel Petry & Sons	Florence	Semi-bituminous	106	3	1,099	20
Williamsburg Slope	Williamsburg Coal Co.	Canon City	Semi-bituminous	30	6	826	....
Magnet	North Magnet Coal Co.	Florence	Semi-bituminous	130	4	671	....
Total—Number	of Mines Operated: 22			161.2	1,137	612,221	....

TABLE B—Continued

GARFIELD COUNTY

Name of Mine	Name of Company	Mine Post Office	Character of Coal	Number of Days Worked	Average No. of Men Employed	Total Number of Tons Produced	Capacity of Mine Per Day, Tons
Carbonera	Gilson Asphaltum Co.	Carbonera via Mack	Bituminous	237	9	11,058	80
South Canon	South Canon Mine Leasing Co.	Glenwood Springs	Bituminous	201	7	6,914	....
Rauman	Rauman Coal Co.	Rifle	Bituminous	274	4	1,539	5
McLearn	Rifle Coal Co.	Rifle	Bituminous	166	3	1,379	10
Harvey Gap	Bracken & Cozza	New Castle	Bituminous	216.3	3	1,184	7
Ohkraut	Ohkraut Mining Co.	Glenwood Springs	Bituminous	60	2	463	....
Estes	Frank Estes	Rifle	Bituminous	35	2	325	25
Allen No. 2	New Castle Syndicate Co.	New Castle	Bituminous	50	10	284	....
Total—Number	of Mines Operated: 8	....	....	161.8	40	23,146	....

GUNNISON COUNTY

Somerset	Utah Fuel Co.	Somerset	Bituminous	230	218	267,571	1,800
Elk Mountain	Colorado Fuel & Iron Co.	Crested Butte	Semi-anthracite	191.2	85	72 541	425
Crested Butte	Colorado Fuel & Iron Co.	Crested Butte	Bituminous	152	112	71,393	600
Horace	Ross Coal Co.	Crested Butte	Anthracite	203.2	68	37,884	300
Bulkley No. 2	Crested Butte Coal Co.	Crested Butte	Bituminous	116.5	29	23,066	400
Smith-Anthracite	Crested Butte Anthracite M. Co	Crested Butte	Anthracite	97	36	16,692	300
Alpine	Rocky Mountain Fuel Co.	Baldwin	Semi-bituminous	121.9	45	28,472	300
Ohio Creek	Ohio Creek Coal M. Co.	Gunnison	Semi-bituminous	128	29	17,906	200
Baldwin-Star	Baldwin Fuel Co.	Baldwin	Bituminous	119	6	6,311	....
Oliver	Oliver Coal Co.	Somerset	Semi-anthracite	120	13	1,000	50
Total—Number	of Mines Operated: 10	....	....	180.3	641	542,836	....

HUERFANO COUNTY

Robinson-Walsen	Colorado Fuel & Iron Co.	Walsen	Bituminous	175.7	302	280,058	2,050
Ideal	Colorado Fuel & Iron Co.	Ideal	Bituminous	252.1	211	232,391	1,000
Lester	Colorado Fuel & Iron Co.	Lester	Bituminous	255.1	210	199,997	900
Cameron	Colorado Fuel & Iron Co.	Farr	Bituminous	160.7	174	148,844	1,000
Pictou	Colorado Fuel & Iron Co.	Pictou	Bituminous	157	91	76,942	800
Kebler No. 1	Colorado Fuel & Iron Co.	Tioga	Bituminous	20.9	16	4,749	225
Kebler No. 2	Colorado Fuel & Iron Co.	Tioga	Bituminous	153.2	64	44,401	600
Jobal	Colorado Fuel & Iron Co.	Pictou	Bituminous	137.4	37	36,310	300
Calumet	Calumet Fuel Co.	Delcarbon	Bituminous	220	176	202,172	1,000
Oakdale	Oakdale Coal Co.	Oakview	Bituminous	229	156	135,753	600
Mutual	Mutual Coal Co.	Walsenburg	Bituminous	237	149	130,711	700
Gordon	Gordon Coal Co.	Camp Shumway	Bituminous	222	90	67,084	300
Ravenwood	Victor-American Fuel Co.	Ravenwood	Bituminous	266.1	130	66,492	500
Pryor	Union Coal & Coke Co.	Pryor	Bituminous	140	89	54,727	500
Sunnyside	Sunnyside Coal M. Co.	Strong	Bituminous	84	71	45,619	700
Toltec	Aztec Coal M. Co.	Toltec	Bituminous	166.8	65	41,230	350
Maitland Nos. 1 and 2	McNally & Thompson	Maitland	Bituminous	155.7	76	40,066	400
Hezron	Caddell & Son	Lester	Bituminous	210	36	36,690	150
Brennan	Brennan Coal M. Co.	Camp Shumway	Bituminous	142.3	57	36,557	350
Reliance	Canon-Reliance Coal Co.	Ojo	Bituminous	184.5	58	30,503	300
Vesta	Vesta Mines Inc.	Camp Shumway	Bituminous	93.5	39	13,472	300
Caddell	Black Canon Coal & Fuel Co.	Walsenburg	Bituminous	167	31	13,360	150
Leader No. 1	Fruth & Stone	Walsenburg	Bituminous	135.2	25	8,166	100
Leader No. 3	Fruth & Stone	Walsenburg	Bituminous	152	2	1,269	30
Cuchara Canon	Cuchara Canon Coal Co.	Walsenburg	Bituminous	124	26	6,093	70
Rugby	Rugby Collieries Co.	Rugby	Bituminous	94	24	5,048	100
Alamo	Alamo Coal Co.	Alamo	Bituminous	73	55	3,341	2,500
Bunker Hill	Steve Mattivi & Son	Rapson	Bituminous	90	20	3,000	75
Round Oak	Brown Coal Co.	Walsenburg	Bituminous	117	3	1,910	15
Black Hills	Black Hills Coal Co.	Tioga	Bituminous	120	3	1,400	20
Fern	La Veta Coal Co.	La Veta	Bituminous	90	5	1,044	....
Total—Number	of Mines Operated: 31			190.3	2,491	1,969,399	....

JACKSON COUNTY

Moore No. 1	North Park Coal Co.	Coalmont	Sub-bituminous	214.5	43	47,776	500
Moore No. 2	North Park Coal Co.	Coalmont	Sub-bituminous	93	12	2,747	40
Marr	Joseph Simpson	Walden	Sub-bituminous	151	3	1,473	50
Total—Number	of Mines Operated: 3			186.1	58	51,996	......

TABLE B—Continued

JEFFERSON COUNTY

Name of Mine	Name of Company	Mine Post Office	Character of Coal	Number of Days Worked	Average No. of Men Employed	Total Number of Tons Produced	Capacity of Mine Per Day, Tons
Leyden No. 3	Leyden Coal Co.	Leyden via Golden	Sub-bituminous	212.5	168	150,007	1,000
Christensen	Christensen Coal Co.	Littleton	Sub-bituminous	157	10	3,781	100
Sharon	Arnold & Shaklee	Mt. Morrison	Sub-bituminous	41	11	925	100
Total—Number	of Mines Operated: 3	....	....	199.6	189	154,713	....

LA PLATA COUNTY

Name of Mine	Name of Company	Mine Post Office	Character of Coal	Number of Days Worked	Average No. of Men Employed	Total Number of Tons Produced	Capacity of Mine Per Day, Tons
Perins Peak	Calumet Fuel Co.	Perins	Bituminous	222.7	68	53,770	300
San Juan	American Smelting & Ref. Co.	Durango	Bituminous	259	33	25,421	150
Sunshine	Sunshine Coal Co.	Durango	Bituminous	192	11	11,343	56
Champion	Champion Coal Co.	Durango	Bituminous	237	9	5,599	50
O. K.	O. K. Coal Co.	Durango	Bituminous	217	8	4,081	40
Morning Star	Baudino & Co.	Durango	Bituminous	207	5	4,998	24
Peacock	Peacock Coal Co.	Hesperus	Semi-bituminous	179	6	2,403	50
Tipotsch	Frank Tipotsch	Hesperus	Bituminous	120	2	1,079	....
Minnie	Minnie Coal Co.	Durango	Bituminous	184	3	675	8
City	H. J. Rasmussen	Durango	Bituminous	134	2	576	5
Triangle	Triangle Coal Co.	Durango	Bituminous	29	3	434	75
Grange	Florida Grange	Griffith	Bituminous	90	1	144	10
Total—Number	of Mines Operated: 12	....	....	218.7	151	110,523	....

LAS ANIMAS COUNTY

Frederick	Colorado Fuel & Iron Co.	Valdez	Bituminous	208.5	344	308,743	1,500
Primero	Colorado Fuel & Iron Co.	Primero	Bituminous	206.2	306	262,215	1,200
Morley	Colorado Fuel & Iron Co.	Morley	Bituminous	244.9	261	250,488	1,200
Sopris	Colorado Fuel & Iron Co.	Sopris	Bituminous	186.5	371	231,895	1,200
Tabasco	Colorado Fuel & Iron Co.	Berwind	Bituminous	212.6	217	212,883	900
Berwind	Colorado Fuel & Iron Co.	Berwind	Bituminous	122.2	224	183,379	800
Toller	Colorado Fuel & Iron Co.	Tollerburg	Bituminous	193 1	157	121,313	750
Engle	Colorado Fuel & Iron Co.	Trinidad	Bituminous	10	46	8,410	200
Delagua	Victor-American Fuel Co.	Delagua	Bituminous	173.6	469	375,043	2,200
Cass	Victor-American Fuel Co.	Delagua	Bituminous	163.2	191	135.829	1,000
Hastings	Victor-American Fuel Co.	Hastings	Bituminous	16.7	123	7,049	500
Boncarbo	American Smelting & Ref. Co.	Cokedale	Bituminous	244.5	220	226,481	1,500
Royal	Royal Fuel Co.	Aguilar	Bituminous	172	256	167,832	1,100
Brodhead No. 9	Temple Fuel Co.	Brodhead	Bituminous	185	149	101,646	800
Bear Canon Nos. 3 and 6	Bear Canon Coal Co.	Vallorso	Bituminous	196	164	88,377	900
Empire	Empire Coal M. Co.	Aguilar	Bituminous	171.8	103	73,175	650
Thor	National Fuel Co.	Bowen	Bituminous	172 6	89	61,564	500
Forbes No. 9	Rocky Mountain Fuel Co.	Forbes	Bituminous	200.9	89	56.972	300
Southwestern	Rocky Mountain Fuel Co.	Aguilar	Bituminous	241.4	54	32,831	250
La Belle	Rocky Mountain Fuel Co.	Sopris	Bituminous	21	52	5,231	200
Three Pines	Three Pines Coal Co.	Vallorso	Bituminous	213	83	56,861	350
Ludlow	Huerfano Coal Co.	Ludlow	Bituminous	89.7	116	53,030	600
Jewel	Jewel Collieries Co.	Aguilar	Bituminous	205	54	40,657	400
Dix	Dick Coal Co.	Boncarbo	Bituminous	156	40	27,680	300
Stanley	Stanley Mine Co.	Boncarbo	Bituminous	141.8	43	24,214	225
Rapson	Rapson Coal M. Co.	Rapson	Bituminous	197.3	40	20,285	300
Greenville	Cedar Hill Coal & Coke Co.	Ludlow	Bituminous	173.3	32	16,195	250
Prairie Canon	Prairie Canon Coal Co.	Vallorso	Bituminous	75	30	10,001	250
Vickers	Vickers Coal Co.	Rugby	Bituminous	145	23	7 162	100
Jeffryes	Jeffryes Fuel Co.	Trinidad	Bituminous	203.4	16	6,158	200
Pritchard	Wilton Coal Co.	Trinidad	Bituminous	261	4	2,739	12
Baldy Mountain	Trinidad Coal Co.	Trinidad	Bituminous	236	4	2,255	25
Baldy	Wm. Irons, Jr.	Trinidad	Bituminous	110	3	2,251	20
Young	Young & Caddell	Rapson	Bituminous	89	7	2,225	....
Liberty	Liberty Coal Co.	Forbes	Bituminous	110	13	2,039	....

TABLE B—Continued

LAS ANIMAS COUNTY—Continued

Name of Mine	Name of Company	Mine Post Office	Character of Coal	Number of Days Worked	Average No. of Men Employed	Total Number of Tons Produced	Capacity of Mine Per Day, Tons
Pickford	Boaglio Coal Co.	Trinidad	Bituminous	203.8	2	1,895	15
Beshoar	Joerger Fuel Co.	Trinidad	Bituminous	252	2	1,794	....
Fawcett	Pine Fuel Co.	Aguilar	Bituminous	246	3	1,046	5
Niggerhead	J. V. Cornwell	Trinidad	Bituminous	210	2	760	5
Hoye-Superior	Bell & Stout	Trinidad	Bituminous	184	2	751	10
Corra	John Corra	Sopris	Bituminous	100	3	650	....
Fairview	Fairview Coal Co.	Trinidad	Bituminous	90	3	600	....
Fishers Peak	R. Marsh	Trinidad	Bituminous	52	2	525	6
Star	Chas. Rankin	Rapson	Bituminous	20	12	480	....
Verdun	Malone & Dennis	Trinidad	Bituminous	187	1	392	3
Amador	July Coal Co.	Aguilar	Bituminous	70	2	361	....
Congo	Collier Coal Co.	Aguilar	Bituminous	120	1	340	....
McIntosh	Enrietta & Co.	Trinidad	Bituminous	111	1	331	....
Primrose	Black Hawk Coal Co.	Rugby	Bituminous	1	26	202	....
Prospect	Ludvik Kotala	Trinidad	Bituminous	56	2	199	....
Total—Number	of Mines Operated: 50	....	....	177.6	4,457	3,195,434	....

MESA COUNTY

Cameo	Grand Junction M. & F. Co.	Cameo	Semi-bituminous	203	99	98,022	600
Palisade	Palisade Coal & Supply Co.	Palisade	Semi-bituminous	204	34	18,251	200
Midwest	Midwest Coal Co.	Palisade	Semi-bituminous	159	35	18,056	300
Garfield	Colorado Lumber & Inv. Co.	Palisade	Semi-bituminous	211	32	17,903	200
Stokes	W. D. Stokes	Palisade	Semi-bituminous	174	9	4,633	80
Book Cliff	Book Cliff Coal Co.	Grand Junction	Semi-bituminous	64	9	3,541	100
Riverside	Riverside Coal Co.	Palisade	Semi-bituminous	257	6	3,153	25
Winger	Mesa Fuel Co.	Palisade	Semi-bituminous	199	4	2,813	......
Thomas	Thomas Coal Co.	Grand Junction	Semi-bituminous	264	3	1,750	30
Stove Canyon	O. K. McLendon	Fruita	Semi-bituminous	141.9	3	1,485	15
Hidden Treasure	Hidden Treasure M. Co.	Grand Junction	Semi-bituminous	220	2	1,208	......
Anchor	Anchor Coal Co.	Fruita	Semi-bituminous	195	2	1,150	60
Nearing	Liberty Coal & Merc. Co.	Fruita	Semi-bituminous	143	2	1,137	40
Midway	W. O. Pennington	Grand Junction	Semi-bituminous	187	2	1,110	10
Farmer-Mutual	Farmer-Mutual Coal Co.	Grand Junction	Semi-bituminous	129	3	980	5
McGinley	Wm. McGinley	Grand Junction	Semi-bituminous	117	2	664	......
Hunter	J. B. Hunter	Fruita	Semi-bituminous	60	1	236	7
Totals—Number	of Mines Operated: 17			190.4	248	176,092	......

MOFFAT COUNTY

Mt. Evans	Mt. Evans Fuel Co.	Craig	Bituminous	212	5	2,509	20
Collom	Axial Basin Dev. Co.	Axial	Bituminous	26	1	171	......
Total—Number	of Mines Operated: 2			181	6	2,680	......

MONTEZUMA COUNTY

School Sec. Lease	French & Fielding	Mancos	Sub-bituminous	213	3	2,147	20
Kelly	Cortez Coal Co.	Cortez	Sub-bituminous	261	5	1,706	......
Freeman	J. R. Freeman	Mancos	Sub-bituminous	225.1	2	824	10
Total—Number	of Mines Operated: 3			239.4	10	4,677	......

TABLE B—Continued

MONTROSE COUNTY

Name of Mine	Name of Company	Mine Post Office	Character of Coal	Number of Days Worked	Average No. of Men Employed	Total Number of Tons Produced	Capacity of Mine Per Day, Tons
Cloverdale	Naturita Stores Co.	Naturita	Sub-bituminous	239.1	2	888	15
Happy Canon	Happy Canon Coal Co.	Montrose	Sub-bituminous	60	6	600	6
Liberty Bell	John H. Drott	Naturita	Sub-bituminous	139	1	449	5
Missouri	J. S. Chew	Nucla	Sub-bituminous	33	1	168	5
Total—Number	of Mines Operated: 4			101	10	2,105	......

PITKIN COUNTY

Name of Mine	Name of Company	Mine Post Office	Character of Coal	Number of Days Worked	Average No. of Men Employed	Total Number of Tons Produced	Capacity of Mine Per Day, Tons
Marion	J. R. Marchetti	Carbondale	Bituminous	167.6	2	2,856	25
Placita	Rapini & Hughes	Placita	Bituminous	66	4	593	......
Total—Number	of Mines Operated: 2			99.9	6	3,449	......

RIO BLANCO COUNTY

Name of Mine	Name of Company	Mine Post Office	Character of Coal	Number of Days Worked	Average No. of Men Employed	Total Number of Tons Produced	Capacity of Mine Per Day, Tons
Lion Canon	White River Lumber Co.	Meeker	Bituminous	292	2	1,470	15
Black Diamond	Reynolds & Donnelly	Meeker	Bituminous	134.5	2	1,422	50
Oldland	Good Coal Co.	Meeker	Bituminous	193.5	2	930	25
Riley	T. D. Riley	Meeker	Bituminous	120	2	290	3
Rio Blanco	Rio Blanco Coal Co.	Meeker	Bituminous	138	2	225	......
McKee	Robert McKee	Meeker	Bituminous	60	2	200	......
Fairfield	E. F. Fairfield	Meeker	Bituminous	60.5	2	172	......
Sulphur	Sulphur Coal Co.	Meeker	Bituminous	25	3	125	6
Total—Number	of Mines Operated: 8			121.9	17	4,834	......

ROUTT COUNTY

Oak Hills No. 1	Moffat Coal Co.	Oak Creek	Bituminous	61.8	173	140,350	2,000
Oak Hills No. 2	Moffat Coal Co.	Oak Creek	Bituminous	58.7	178	133,933	2 000
Harris	Colorado & Utah Coal Co.	Mt. Harris	Bituminous	85.4	224	210,308	2,500
Pinnacle	Victor-American Fuel Co.	Oak Creek	Bituminous	46	120	77,065	2,000
Wadge	Victor-American Fuel Co.	Mt. Harris	Bituminous	32	70	36,654	1,000
Hayden	Hayden Bros. Coal Corp.	Haybro	Bituminous	105.6	101	57,417	1.500
MacGregor	McNeil Coal Co.	MacGregor	Bituminous	33.1	66	51,316	1,200
Bear River	Bear River Coal Co.	Bear River	Bituminous	37.5	53	33,650	600
Wolf Creek	International Fuel Corp.	Mt. Harris	Bitûminous	48.6	27	17,471	450
Yampa	Yampa Coal Co.	Milner	Bituminous	56.3	25	11,755	500
Routt-Pinnacle	Routt-Pinnacle Coal Co.	Bear River	Bituminous	26.5	28	9,740	450
Rainbow	Wyoming-Colorado Coal Co.	Milner	Bituminous	12.5	36	8,534	......
Curtis	Colorado Fuel Co.	Milner	Bituminous	36.5	15	3,569	60
Mutual (Dry Creek)	Hayden Valley Mutual Coal Co.	Hayden	Bituminous	200	6	2,675	15
Cozard	Routt County Coal Co.	Hayden	Bituminous	83	6	1,694	......
Solar	Solar Coal M. Co.	Milner	Bituminous	39	14	1,630	....
Butcher Knife	C. O. Rudisill	Steamboat Springs	Bituminous	120	4	1,222	30
Seven Points	Seven Points Coal Co.	Oak Creek	Bituminous	202	1	492	50
Postal	Postal Coal M. Co.	Oak Creek	Bituminous	14	8	447	100
Total—Number	of Mines Operated: 19			60.9	1.155	799,922	

SAN MIGUEL COUNTY

Wrights	Hawkes Garage	Norwood	Sub-bituminous	190	1	210	2
Galloway	John R. Galloway	Norwood	Sub-bituminous	90	1	109	......
Edgell	T. H. Edgell	Norwood	Sub-bituminous	85	1	100	4
Total—Number	of Mines Operated: 3			121.7	3	419	....

TABLE B—Continued

WELD COUNTY

Name of Mine	Name of Company	Mine Post Office	Character of Coaol	Number of Days Worked	Average No. of Men Employed	Total Number of Tons Produced	Capacity of Mine per Day, Tons
Columbine	Rocky Mountain Fuel Co.	Serene	Sub-bituminous	253.2	359	372,242	2,500
Grant	Rocky Mountain Fuel Co.	Frederick	Sub-bituminous	144.4	63	90,465	1,000
Frederick	Rocky Mountain Fuel Co.	Frederick	Sub-bituminous	103.2	22	12,209	300
Puritan	National Fuel Co.	Dacono	Sub-bituminous	196.5	210	271,458	2,000
Clayton	Clayton Coal Co.	Erie	Sub-bituminous	204.5	131	193,502	1,600
Baum	Consolidated Coal & Coke Co.	Dacono	Sub-bituminous	160.5	97	131,531	1,000
Sterling	Grand Junction M. & F. Co.	Dacono	Sub-bituminous	144.1	92	108,430	1,000
Evans	International Fuel Corp.	Frederick	Sub-bituminous	177.3	81	95,550	800
Boulder Valley	Boulder Valley Coal Co.	Erie	Sub-bituminous	119.8	100	88,427	1,000
Shamrock	Shamrock Coal Co.	Erie	Sub-bituminous	215.6	50	77,256	600
Russell	W. E. Russell Coal Co.	Firestone	Sub-bituminous	127.7	74	65,090	600
Eureka	Bell Mining Co.	Longmont	Sub-bituminous	207	26	36,469	350
Monroe	United Collieries Co	Erie	Sub-bituminous	146	26	22,144	300
Witherbee	Fort Lupton Coal Co.	Ft. Lupton	Sub-bituminous	233	9	5,216	35
White Ash	George Bedlien	La Salle	Sub-bituminous	205	3	1,368	8
Hill	Keota Coal M. Co.	Briggsdale	Sub-bituminous	39	3	160	20
Total—Number	of Mines Operated: 16			191.5	1,346	1,571,517	
Total—State of Colo	rado Mines Operated: 265			169.9	13,277	10,336,735	

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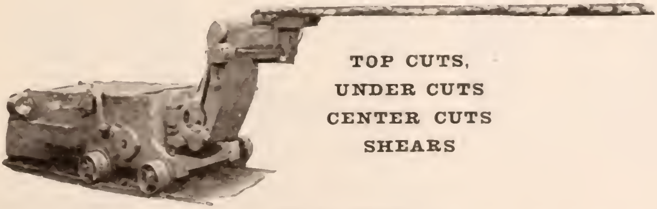

TOP CUTS,
UNDER CUTS
CENTER CUTS
SHEARS

Used by

Rocky Mountain Fuel Co.
Boulder Valley Coal Co.
Moffat Coal Co.
St. Louis, Rky. Mtn. & Pacific
Utah Fuel Co.
Grand Junction M. & F. Co.
Temple Fuel Co.
Colo. & Utah Coal Co.
Alamo Coal Co.
Standard Coal Co.

OLDROYD MACHINE COMPANY
Cincinnati, Ohio.

Represented by
THE O. H. DAVIDSON EQUIPMENT CO.

TABLE C

PRODUCTION OF COUNTIES BY MONTHS—1923

Months	Archuleta	Boulder	Delta	Elbert	El Paso	Fremont
January	....	62,749	10,086	1,045	42,797	55,293
February	....	76,095	5,969	359	44,807	52,205
March	....	71,008	5,401	320	41,123	51,561
April	....	37,760	4,870	182	24,288	46,988
May	....	25,824	6,227	78	20,060	53.563
June	....	20,134	7,304	51	15,027	40,150
July	....	23,895	9,032	19	12,975	28,194
August	....	45,396	9,812	60	17,441	40,046
September	....	63,588	11,249	78	23,846	59.742
October	....	75.468	12,018	166	37,627	61,844
November	....	61,215	14,668	307	34,812	65,129
December	1,896	73,601	12,149	336	45,554	57.506
Totals	1,896	636.733	108.785	3,001	360,357	612,221

	Garfield	Gunnison	Huerfano	Jackson	Jefferson	La Plata
January	2,704	51,626	185,027	7,071	18,779	12,969
February	2,356	38,895	154,638	5,332	18,456	10,430
March	1,438	38,620	153,832	3,599	18,010	7,607
April	1,168	38,721	145,370	3,150	12,557	8 026
May	1,519	42,299	152,329	2,480	11,122	7,535
June	1,636	48,911	150,972	1,520	8,847	6.603
July	1,643	49,510	161,919	1,966	6,508	8.732
August	1,561	59,137	150,993	2,824	7,864	9,574
September	1,728	52,256	169,275	3,640	10,561	7,263
October	1,961	49,028	188,879	3,992	12,330	10,416
November	2,489	33,231	176,133	7,942	14,007	10,469
December	2,943	40,602	180,032	8,480	15,672	10,899
Totals	23,146	542,836	1,969,399	51,996	154,713	110,523

	Las Animas	Mesa	Moffat	Montezuma	Montrose	Pitkin
January	312,445	17,943	267	577	160	300
February	268,927	11,907	129	297	128	316
March	279,030	10,973	164	177	98	60
April	275,103	7,205	95	124	22	11
May	281,234	8,872	119	194	44	122
June	284,427	10,027	98	188	123	194
July	251,184	15,920	204	174	7	....
August	244,897	13,147	163	276	66	206
September	240,726	18,191	231	419	66	269
October	237,526	21,182	312	700	282	448
November	244,627	21,886	460	802	285	794
December	275,308	18,839	438	749	824	729
Totals	3,195,434	176,092	2,680	4,677	2,105	3,449

	Rio Blanco	Routt	San Miguel	Weld	Grand Total
January	661	37,348	....	172,554	992,401
February	403	57,475	....	171,287	920,411
March	504	34,940	....	159,601	878,066
April	262	54,041	....	87,214	747.157
May	145	55,140	....	66,591	735,497
June	125	110.230	....	50,888	757,455
July	99	68,355	....	50,807	691,143
August	137	68,537	....	85,084	757,221
September	372	66,476	....	136,272	866,248
October	396	74,518	....	190,784	979,877
November	510	85,739	....	186,162	961,667
December	1,220	87,123	419	214,273	1,049,592
Totals	4.834	799,922	419	1,571,517	10,336,735

TABLE D

SHOWING INCREASE AND DECREASE BY COUNTIES, 1922-1923

Counties	Tons Produced 1922	Tons Produced 1923	Increase	Decrease
Adams	481			481
Archuleta	248	1,896	1,648	
Boulder	711,476	636,733		74,743
Delta	108,607	108,785	178	
Elbert	3,039	3,001		38
El Paso	388,162	360,357		27,805
Fremont	482,389	612,221	129,832	
Garfield	20,725	23,146	2,421	
Gunnison	439,912	542,836	102,924	
Huerfano	2,091,826	1,969,399		122,427
Jackson	61,308	51,996		9,312
Jefferson	180,547	154,713		25,834
La Plata	84,325	110,523	26,198	
Las Animas	3,369,891	3,195,434		174,457
Mesa	154,652	176,092	21,440	
Moffat	7,185	2,680		4,505
Montezuma	4,507	4,677	170	
Montrose	1,517	2,105	588	
Ouray	500			500
Pitkin	2,589	3,449	860	
Rio Blanco	4,127	4,834	707	
Routt	418,096	799,922	381,826	
San Miguel		419	419	
Weld	1,467,501	1,571,517	104,016	
Totals	10,003,610	10,336,735		

Increase, 1923 333,125

TABLE E

COKE PRODUCED IN 1923 BY COMPANIES AND COUNTIES

Companies	Total No. of Ovens Used	Total Tonnage	Counties	Total No. of Ovens Used	Total Tonnage
American Smelting and Refining Co.	278	106,502	La Plata	26	9,708
Colorado Fuel and Iron Co.	267	542,349	Las Animas	399	190,900
			Pueblo	120	448,243
Totals	545	648,851		545	648,851

REMARKS:

Average number of days worked at the coke ovens 340.5
Average number of men employed at the coke over 246
Number of tons of coal made into coke 1,068,354

TABLE F

SHOWING BY COUNTIES COAL PRODUCTION OF 1923 IN PREPARED SIZES

Counties	Mine Run	Lump	Nut	Pea	Slack	Total
Archuleta	1,896					1,896
Boulder	184,144	199,424	29,026		224,139	636,733
Delta	39,642	38,684	14,121		16,338	108,785
Elbert	1,352	1,357			292	3,001
El Paso	122,749	103,852	11,011		122,745	360,357
Fremont	66,151	292,611	98,366	3,538	151,555	612,221
Garfield	15,786	4.320	2,482	228	330	23,146
Gunnison	*389,489	80,222	14,931	9,666	48,528	542,836
Huerfano	508,910	743,408	195,122	17,407	504,552	1,969,399
Jackson	11,646	18,171	8,716		13,463	51,996
Jefferson	30,349	34,161	18,260		71,943	154,713
La Plata	92,106	7.611	3,038	788	6,980	110,523
Las Animas	1,339,757	572,043	145,446	7,417	1,130,771	3,195,434
Mesa	77,907	49,196	13,920	2,011	33,058	176,092
Moffat	2,680					2,680
Montezuma	2,335	1,799	240		303	4,677
Montrose	2,105					2,105
Pitkin	3,449					3,449
Rio Blanco	1,876	2,237	504	86	131	4,834
Routt	167,594	331,823	110,012	14,985	175.508	799,922
San Miguel	419					419
Weld	185,881	637,154	196.295		552.187	1,571,517
Totals	3,248,223	3,118,073	861.490	56,126	3,052,823	10,336,735

*54,576 tons Arthracite and 73,541 tons Semi-Anthracite included.

NOTE—In the Slack, some mines include Pea and others Nut and Pea coal. The Egg coal is included in the Nut and the Grate coal is included in the Slack. (The Egg and Grate coal reported only from Routt County.)

COAL PRODUCTION OF COLORADO FROM 1873 TO 1923, INCLUSIVE

Year	Tons	Year	Tons
1873	69,977	1898	4,174,037
1874	87,372	1899	4,826,939
1875	98,838	1900	5,495,734
1876	117,666	1901	6,021,405
1877	160,000	1902	7,522,923
1878	200,630	1903	7,775,302
1879	322,732	1904	6,776,551
1880	375,000	1905	8,989,631
1881	706,744	1906	10,308,421
1882	1,161,479	1907	10,965,640
1883	1,220,593	1908	9,773,007
1884	1,130,024	1909	10,772,490
1885	1,398,796	1910	12,104,887
1886	1,436,211	1911	10,19[illegible]
1887	1,791,735	1912	11,016,948
1888	2,185,477	1913	9,268,939
1889	2,400,629	1914	8,201,423
1890	3,075,781	1915	8,715,397
1891	3,512,632	1916	10,522,185
1892	3,771,234	1917	12,515,305
1893	3,947,056	1918	12,658,055
1894	3,021,028	1919	10,406,543
1895	3,339,495	1920	12,514,693
1896	3,371,633	1921	9,141,947
1897	3,565,660	1922	10,003,610
		1923	10,336,735

The Very Best Domestic Coal in Colorado

Bright, Hard,
Clean, Little Ash,
Practically Sootless, No Clinkers.

Lump, Nut, Chestnut, Slack and
Mine Run

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COAL

Billing Point:
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Denver, Colorado

HARRY F. NASH, *V-Pres. & Gen'l Mgr. Sales*

COALS *of* QUALITY

Lignite—

Puritan and Shamrock } Weld County District
Monarch—Louisville District

Bituminous—

Thor—Trinidad District
Royal—Walsenburg District

"A coal mine with a capacity of 1,000 tons per day has a value to a railroad equivalent to a town with a population of 30,000 people."

NATIONAL FUEL COMPANY

PRODUCERS AND SHIPPERS

511-520 Colorado Bldg.
DENVER, COLO.

MINE DISASTERS AND MISCELLANEOUS FATAL ACCIDENTS, 1923

Aguilar, Colo., June 25, 1923.

Mr. James Dalrymple,
State Inspector of Coal Mines,
State Office Building,
Denver, Colo.

Dear Sir:

The following is my report concerning the explosion at the Southwestern mine, which occurred on the 5th of May, 1923, resulting in the death of ten men. I was in the Reliance mine at the time and as soon as informed, left for the Southwestern mine, arriving at the mine office about 6:30 p. m. The U. S. Bureau of Mines car No. 2 had arrived earlier in the day. Three helmet crews, composed of men from the Victor-American Fuel Co., Colorado Fuel & Iron Co., and the U. S. Bureau of Mines Rescue Car, Deputy Inspector W. M. Laurie, The Victor-American Fuel Co., and Colorado Fuel & Iron Co., safety inspectors, the Mutual Insurance Company's Deputy Inspector, Superintendents, Mine Foremen, and other practical men from the surrounding mines were giving their services. On arriving at the mine entrance, I found that the fan house had been repaired and fan running fifteen minutes after the explosion. Two bodies had been recovered from the manway. After ascertaining the whereabouts of the remaining bodies, I entered the mine. The crews advanced as far as the 3rd North parting and with the aid of the helmet crew, four more bodies were recovered in this section. The work of rebuilding temporary stoppings was continued and all the bodies were recovered by 9:00 a. m. May 6th, 1923.

The mine is situated about two miles northwest from the town of Aguilar, Las Animas county, Colorado, on the Colorado & Southern Railway. It is operated by the Rocky Mountain Fuel Co., of Denver, Colo. Mr. George T. Peart is Assistant General Manager, Mr. William Morgan, Division Superintendent, and Mr. Morgan Williams is Superintendent and Mine Foreman. Mr. William Thomas, fire boss.

The seams being operated are the upper and lower Robinsons. The explosion occurred in the lower seam, known as the North and South Slopes. The coal is bituminous, running from three to five feet in thickness. The coal is mined by hand. The ground is faulty. The mine is very dry, water very scarce and only available through purchase. The water for domestic use, outside hoist, and sprinkling of mine is pumped from Brodhead mine, a distance of one mile over the hills. Electric hoists were used for haulage purposes on inside slope and dip workings. Ventilation was produced by fan, electrically driven, producing about 40,000 cu. ft. of air per minute.

Ordinarily there were between thirty and forty men employed in the mine, but on May 5th, 1923, the mine was idle. A few men were working, some cleaning haulage roads and others making coal for the next working day. As customary the fire boss had fired the shots and examined the mine prior to other employes going to work, and reported the mine in safe condition to the mine foreman, who visited the places where the men were working that morning, between nine and eleven a. m. On the morning of the explosion, fire boss record books showed mine clear of explosive gas from April 16th to May 4th, inclusive. The record book for May 5th had not been signed at this date, but was signed later showing mine clear of gas.

From testimony given at the inquest it was stated that there were only three men at the mine who knew how to start the fan. The superintendent, mine electrician, and the mine blacksmith. According to the daily records of The Trinidad Power and Transmission Company, the power went off at 12:41 p. m., returning two minutes later, but owing to the volt release being thrown out, the fan could not start until the release was thrown in. The superintendent being at dinner, about one-fourth of one mile distant, the electrician being in Denver, and the blacksmith being employed at a point where he could not tell anything about the power, there was no one present who knew how to start the fan. The superintendent upon returning to the mine about 1:20 p. m., being notified that the fan was not running, threw in the release. About three minutes later the explosion occurred.

The Southwestern mine was examined by me on February 7th, 1923. I found numerous faults were being encountered, gas being given off at some of them, and while the mine had always been an open light mine, I believed that on account of the faults, some of which were giving off explosive gas, the over-head cover getting greater, and the mine being dry, that Permissible Electric Head Safety Lamps should take the place of the open lights and so recommended. Mr. George Peart, upon receipt of recommendations advised by letter that electric head lamps would be installed. This recommendation had not been complied with at the time of the explosion. Mr. George T. Peart, Assistant General Manager for the company, produced letters at the inquest stating that electric head lamps had been ordered from the Mine Safety Appliances Co., of Pittsburgh, Pa., and that no assurance could be given as to the date of delivery by the manufacturers. In the meantime the coal company had some electric lamps brought from some of their other properties, but many of the batteries were found defective, and only a few of them in working condition, which were given to the men working in the most dangerous places in the mine. The following is a copy of a letter which the Chief Inspector of Coal Mines received from the Mine Safety Appliances Co., concerning the placing of order for electric head lamps and efforts made to get same.

MINE SAFETY APPLIANCES CO.
908-912 Chamber of Commerce Building

Pittsburgh, Pa., June 6, 1923.

Mr. James Dalrymple,
State Inspector of Coal Mines,
Denver, Colorado.

Dear Sir:

We are in receipt of letters written by you to Mr. T. R. Jones, our representative in Denver, Colorado, relative to orders from the Rocky Mountain Fuel Company for Edison electric safety mine lamps, and at his request we have gone over our records during the interval in question and find Rocky Mountain Fuel Company order No. 28539, dated March 2d, 1923, for 20 M-361-4 Edison electric safety mine lamp headpieces complete with cover. This material was not in stock when this order was received, and it has been almost impossible to get headpieces, even up to the present time, and our records show approximately 1,500 of this particular item on back orders with the Edison Storage Battery factory, from whom all of these parts must come.

On April 3d we received a telegram from T. R. Jones relative to this order, as follows:

"Rocky Mountain Fuel order of March 2nd; when can you ship; need goods badly."

To which we replied by wire in the following manner:

"Rocky Mountain Fuel order for headpieces not in stock. Factory promises stock shipment to us middle of month. Will ship soon as available."

Again on April 9th we received a telegram from T. R. Jones regarding this order, from which we quote:

"Add twenty more headpieces to the order of Rocky Mountain Fuel Co. They are in desperate need of these goods and are very bitter over what they call very poor service. Do the very best you can."

This order was amended to include these additional headpieces, but were not in a position to ship, as these parts had not arrived from the Edison factory. On May 8th we received a further request by wire, to make shipments of these parts, to which we replied:

"Factory promises stock shipment to us this week. Will ship headpieces Rocky Mountain Fuel approximately ten days."

Shipment was then made immediately upon receipt of these parts on May 16th.

Yours very truly,
MINE SAFETY APPLIANCES CO.
(Signed) GEO. H. HEIKE,
President.

GHD:KSS
CC—Mr. T. R. Jones.

INVESTIGATION

On the morning of the 7th, the ventilation had been restored sufficient to permit an examination of the mine. Accompanied by Mr. Joseph Watson, Joseph Cochrane, Insurance Inspectors, James Dalrymple, Jr., Victor-American Fuel Co. Inspector, Harry Jones and Morgan Williams, Chief Engineer and Mine Superintendent respectively for the Rocky Mountain Fuel Co., and James Dalrymple, Chief State Inspector of Coal Mines, I entered and examined the whole mine to determine the initial point and cause of the explosion. The initial point was located opposite last crosscut between main and back slopes about 70 feet in by a gas feeder on the back slope where Rozman was working and his body found. Evidences of extreme heat were plentiful with little or no signs of violence. The forces radiated in all directions from this point, increasing in violence as they traveled. Chief Inspector Dalrymple, in the presence of Insurance Inspector Joseph Cochrane, found a carbide lamp at the point where Rozman was working. Upon further search, a can of carbide and matches were found close by and from the position of the carbide lamp it would appear that it was in use at the time of the explosion.

Mr. Rozman had started to work in the slope section two days before the explosion. He was furnished with an Electric Lamp at that time and his carbide lamp was taken from him and locked in a cupboard outside of mine. He was also advised by Supt. Williams that open lights, matches, etc., were not allowed in that part of the mine.

CAUSE OF EXPLOSION

The explosion was caused: first, by the power being cut off the mines by a flash of lightning. Second, by no one being present that knew how to start the fan immediately upon return of power, thereby allowing fan to remain idle for thirty to forty minutes, sufficient to allow considerable explosive gas to accumulate, that upon starting of fan, gas was carried to and came in contact with an open light, exploding, thereby raising the coal dust in suspension causing a general explosion of gas and dust that traversed the whole mine.

REMARKS

Superintendent Morgan Williams, in starting the fan with the men in the mine violated Section 50 of the Coal Mining Laws. Evidently he did it on the impulse of the moment and without thinking.

Respectfully submitted,

HUGO H. MACHIN,

Deputy State Inspector of Coal Mines,

REPORT OF MIDWEST MINE EXPLOSION, OCTOBER 7, 1923

The Midwest mine is situated one and one-half miles east of Palisade, Mesa county, Colorado, on the Denver & Rio Grande Western Railroad and is operated by Robert T. Scott under lease. The mine is a drift mine opening. The main entries are advanced about 1,700 feet in an easterly direction with raise entries running in a southerly direction and called the 3rd and 4th South. Those entries are about 800 feet in length. The mine was ventilated by a small electric exhaust fan located in one of the west openings to surface called room 10 and was installed since July 14th, 1923, the date of the last inspection by Deputy State Inspector of Coal Mines, Jas. W. Graham. The coal was mined by electric cutting machines. Robert Scott acted in the capacity of Superintendent, Mine Foreman and Fire Boss.

James Benda, a tracklayer, alone escaped and according to his testimony, Robert T. Scott, accompanied by J. R. Keys, W. B. Keys, Harvey Keys, R. B. Keys, George McKee, and James Benda, entered the mine about 7:15 a. m. to cut some coal and lay some track. They went as far as the entrance of No. 10 room and stopped. Scott started the fan, ran it for fifteen minutes, and then stopped it. Accompanied by one of the Keys, Scott proceeded with a Safety Lamp, his companion having no lamp, to examine the raise workings. Before reaching face, Scott gave orders to one of the men left at room 10 to start the fan and run it for ten minutes. At this moment Benda asked Scott what he should do and was told to go down the raise entry and get ties to lay a switch near face of raise entries. The fan was started and just as Benda started down to get ties one of the Keys sitting at room 10 got up and with an open light started to the face of raise entries. Benda cautioned him, told him he should not go up there with an open light. Keys answered, "I know what I am doing." Benda proceeded down the entry to get the ties, while he was piling them up the explosion occurred. This was about 10:40 a. m. He also testified that the fan was not run continuously and that it was not running when they entered the mine that morning and that up until ten days prior to the explosion the fan had been operated as a force fan.

I arrived in Palisade on the afternoon of October 8th, 1923, and that evening, accompanied by Mr. Munn of the U. S. Bureau of Mines Car, E. R. Davis, Special Investigator of Fatal Accidents for the State Coal Mine Inspection Department, Jas. W. Graham, Deputy State Inspector of Coal Mines, and several others entered the mine and examined all the raise workings. No explosive gas was found on this examination. The following afternoon we again examined this section of the mine and also the main entries in the main back entry from which the air had been cut off since the explosion, and found half inch cap at the face, three feet from the roof. The safety Lamp used by Scott was found and upon testing it was found to be in safe condition. We failed to find any of the carbide lamps used by the workmen.

Based upon the testimony of James Benda and personal observations, I am of the opinion that the mine was not examined on the morning of October 7th, 1923, prior to the men entering and that Scott undertook to remove a body of explosive gas while the men were in the mine and in doing so he overlooked or forgot the fact that the fan had been changed from a force to an exhaust, thereby changing room number 10 from the main intake to the main return, and that the deceased came to their death by this gas coming in contact with an open light. Coal dust took some part, therefore the explosion is classed as a gas and dust explosion and that Robert T. Scott is held responsible for the explosion because of violating the State Mining Laws.

LIST OF FATAL ACCIDENTS WHICH OCCURRED IN THE COAL MINES OF COLORADO DURING THE YEAR 1923

(1)—January 2—RAFAEL MEDINA, Mexican, pick miner, experience four years, age 21 years, married, one child, employed by Caddell & Son at the Hezron mine, Huerfano county, was killed by a fall of rock. Deceased and his partner were mining coal at the face of their room and ran into an invisible slip which released a rock, falling on the former and killing him instantly. The place had been visited by the mine foreman an hour and a half prior to the accident and apparently it was safe, also the place was well timbered. The accident was due to the inherent danger of the work and no one can be charged with its responsibility.

(2)—January 5—GEORGE EBER, Austrian, driver, experience 18 years, age 34 years, single, employed by the Mutual Coal Company at the Mutual mine, Huerfano county, was killed by a fall of rock. Deceased was gathering coal cars from rooms and bringing them out to an entry. In some inexplicable manner, while riding out on one, a prop was dislodged letting down a cross bar and some rock, which fell on deceased. The car was not derailed, but the prop that was knocked out showed evidence of having been struck by the burr of a bolt used in fastening the rear end of the cars. How it came into contact with the prop could not be determined. At any rate the accident was a mischance and no one is held responsible for it.

(3)—January 10—RALPH NEESHAM, English, asst. mine foreman, experience 25 years, age 42 years, married, five children, employed by the Utah Fuel Company at the Somerset mine, Gunnison county, was injured on Nov. 10, 1922, by being struck by a trip of cars, and died on the above date. Deceased was walking up a slope unaware of an approaching trip, which ran against him before he was able to jump aside, where he would have been safe as there was sufficient clearance on each side of the track. From evidence obtained it was one of those unforeseen accidents for which no one could be held responsible.

(4)—January 12—WALTER SCHENKIER, American, machine miner, experience 5 years, age 27 years, married, one child, employed by the Colorado Fuel & Iron Company at the Lester mine, Huerfano county, was struck by a trip of loaded cars on the 11th of January, which injured him so severely that he died the following day. Deceased was walking on a cross entry and was overtaken by a trip of cars and squeezed against the rib. The accident was due to a mischance as deceased believed that the road was clear, but a switch had been opened that permitted the on-coming trip to pass over. The driver not knowing that the signal to open the switch had not been given. Neither the driver nor deceased was able to state how the switch was opened. The accident was unforeseen and no blame is attached to any one.

(5)—January 12—WILLIAM P. LLOYD, Welsh, fireboss, experience 45 years, age 64 years, widower, children not known, employed by the Victor-American Fuel Company at the Chandler mine, Fremont county, was injured on the 8th of January by being dragged by a mule and died on the above date. Deceased was standing by the roadway which was wide enough for him and a trip to pass along side. However, the mule which was pulling a trip swayed towards him and the end of the shafts caught in his clothes and pulled him under the loaded car. The mule became frightened and could not be stopped in time to save deceased from being severely injured. The accident was a mischance and unavoidable.

(6)—January 23,—PABLO GARCIA, American, pick miner, experience 6 years, age 24 years, single, employed by the Colorado Fuel & Iron Company at the Frederick mine, Las Animas county, was killed by a fall of rock. Deceased and partner were loading coal at face of an entry when a rock gave way from an invisible slip, dislodging two props and burying deceased under the fall. The place was well timbered and the accident was unforeseen and unavoidable.

(7)—January ...., date not given—JOHN WOODWARD, American, farmer, age 48 years, married, three children, resident of Kiowa, Elbert county, was killed by a cave-in. The accident occurred at an outcrop of coal about 16 miles east of Kiowa and is not a regular opening. The farmers in the vicinity are in the habit of going to this place and mining their own coal. Sometimes they stripped the cover off the coal and at other times they went under the cover and took the coal out without using timbers to support the cover. Deceased was working under the cover when about five feet of earth and rock fell on him, injuring him so severely that he died a few hours later. He was warned by a man who was with him that the place did not look safe, but deceased thought it was safe at least until he got the coal out. The accident was not reported and came to the notice of this department by an inquiry made concerning it.

(8)—February 13—JOHN TURLEY, American, pick miner, experience 27 months, age 46 years, single, employed by the Pikes Peak Consolidated Fuel Company at the Pikeview mine, El Paso county, was killed by a fall of rock while drawing a pillar. In driving rooms in this mine about one foot of top coal is left for roof, immediately above this there is about a foot of bone coal. When the roof caves in pillars it splinters and causes the coal and bone to fall for a distance of 10 or 12 feet outside of the bone. Deceased was digging this loose coal from under the rock when it fell, killing him instantly. Accident was due to the inherent danger of the work.

(9)—February 17—POLINIO ROMERO, Mexican, machine miner, experience about a year, age 29 years, single, employed by the Colorado Fuel & Iron Company at the Robinson mine Huerfano county, was killed by a fall of rock. Deceased left his own place which was well timbered to crawl through a small hole into an adjoining entry to get some loose coal which had accidently been shot and was left. Without examing the roof he began to pull off the loose coal with his pick and also released a loose rock which fell on him with fatal results. Deceased had been warned by his partner not to go into this entry but he disregarded the caution. Had he remained in his own working place the accident would have been avoided.

(10)—February 20—THOS. W. BOOTH, American, machine helper, experience 28 years, age 43 years, married and three children, employed by the Canon-Reliance Coal Company at the Reliance mine, Huerfano county, was killed by a fall of rock. At the time of the accident deceased was brushing up some coal which the machine had left on the bottom at the face of the entry. The nearest prop to the face was about 9 feet. A slip ran across the roadway which released the rock while he was brushing under it. This rock had been supported by one prop at the outer edge. It is claimed that when deceased began his brushing that he removed several props, but they could not be located. The responsibility for the accident is laid to both the mine foreman and deceased. Had the place been properly timbered the accident might have been avoided.

(11)—February 22—MIKE POTALO, Italian, machine miner, experience 25 years, age 57 years, married, six children, employed by the National Fuel Company at the Monarch No. 2 mine, Boulder county, was killed by a fall of rock. Deceased was going through a cross cut when a piece of rock fell on him, killing him instantly. The roof where the accident occurred is a rolly sandstone and is considered good but has frequent slips which are hard to detect and fall from the roof without making a sound. The roof had been tested in the morning before the accident and found to be safe. It is possible that the accident might have been avoided had a row of props been carried across the cross cut. However, considering the condition of the roof in the cross cut where slips are difficult to detect, the accident was unavoidable.

(12)—March 4—CHAS. MAGNUSON, American, laborer, experience in coal mines 15 years, age 49 years, married, four children, and

(13)—GUS MAHAS, Greek, laborer, experience 15 years, age 45 years, married, four children, employed by the Alamo Coal Company at the Alamo mine, Huerfano county, were both killed by a run-a-way car. This mine is being opened up and the driving of the slopes is done by the Colorado Construction Company. Both men were in the slope when the accident occurred. A loaded car had just been pulled up the slope when it rushed back, overtaking them and killing them both almost instantly. It appears that the day before the accident the elevation of the track had been raised in order that the loaded cars could be dumped directly into the road wagon. This elevation gave the loaded car the impetus to run back, which it did in this case, there being no safety device attached to hold the car. The accident is charged to the carelessness of the officials in charge of the mine.

(14)—March 16—LUIS TONEATTI, Italian, pick miner, experience ten years, age 43 years, married, three children, employed by the Colorado Fuel & Iron Company at the Cameron mine, Huerfano county, was killed by a fall of rock. Deceased was loading pillar coal when a cave occurred, knocking out the props and crushing deceased under the falling rock. The accident was unforeseen and unavoidable.

(15)—March 20—MARTIN GREGORICH, Austrian, miner, experience 7 years, age 43 years, married, three children, employed by the Utah Fuel Company at the Somerset mine, Gunnison county, was killed by a fall of coal. Deceased had left the face of his room where he had been loading coal and was in the act of passing the corner of a crosscut, when a fall of coal caught him and injured him so severely that he died a few hours later. It appears that an unlooked for bump dislodged the coal. The accident was due to the inherent danger of the work and can be charged to no one.

(16)—March 25—OSCAR CHESS, Bohemian, machine miner, experience ten years, age not given, married, four children, employed by the Garfield Coal M. & T. Company at the Garfield mine, Mesa county, was injured March 19th by lifting a mining machine, and died from the effects of internal injuries on the above date. The accident was unforeseen and no one can be charged with its responsibility.

(17)—April 8—S. L. MOORE, American, pick miner, experience 19 years, age 43 years, married, one child, employed by the Moffat Coal Company at the Oak Hills No. 2 mine, Routt county, was killed by a fall of rock. Deceased was engaged in splitting a pillar. The nearest timber was six feet away and was cross barred and lagged overhead and did not support the rock which fell. The fire boss had examined the place the day before and it being Sunday did not make the usual examination, consequently it is possible that had he done so, he might have discovered the dangerous rock. The accident is charged to the carelessness of the deceased and the mine foreman in not seeing that the place was properly timbered.

(18)—April 10—OSWALD LENKE, German, rock car runner, no underground experience, age 17 years, employed by the Rocky Mountain Fuel Company at the Columbine mine, Weld county, came to his death from suffocation. Deceased was working night shift loading out the rock that came from the shaft and running it across the trestle to a rock dump. The work was slack that night and for some unknown reason, deceased crawled in under the trestle and sat down close to the rock dump from which considerable smoke and fumes were escaping. He probably fell asleep and was overcome by the fumes, causing his death. Deceased being young and inexperienced and knowing nothing about mine gases or gases given off by burning coal, the accident is classed as a misadventure.

(19)—April 12—THOMAS THIRLAWAY, American, machine man and driver, experience 20 years, age 39 years, married, no children, employed by the Big Four Coal & Coke Company the Centennial mine, Boulder county, was injured by being crushed between car and rib on April 6th, and died on the above date. Deceased had started with a mule trip of two loaded cars and when he reached the inby end of the parting, found the points of the latches thrown for the empty track. He endeavored to switch the latches for the loaded track, but failed and slipped and fell to one side of the car. The mule pulled the trip onto the empty track where the pillar rib extends to within eight inches of the rail, here deceased was caught and wedged in so tight that the first car had to be lifted before he could be freed. The accident is classed as unforeseen due to the danger of the occupation.

(20)—April 18—FLAVIANO VALERIO, Mexican, pick miner, experience 12 years, age 32 years, married, two children, employed by the Empire Coal Mining Company at the Empire mine, Las Animas county, was killed by a fall of coal and rock. Deceased was in the act of taking down coal from the face of the room when a bump occurred, throwing out about a ton of coal and rock. The place was well timbered and deceased was a careful workman. It was an unavoidable accident for which no one can be held responsible.

(21)—April 19—FRANK KERR, American, inside engineer, age 55 years, married, four children, employed by the Ross Coal Company at the Horace mine, Gunnison county, was crushed to death under a snowslide. Deceased had left the mine to go home, at a point about fifty feet from the portal of the mine, he stopped to talk with the mine foreman concerning some work. While thus engaged, the latter noticed a snowslide break over the portal of the mine and gave the warning to run. Deceased did not observe the direction of the slide and was caught by it and covered by approximately six feet of sonw and ice. The snowslide destroyed the snowshed which had been put up at the entrance to the mine for protection. The accident was a misadventure for which no one could be blamed.

(22)—April 20—CHARLES HANBY, English, miner, experience several years, age 38 years, married, five children, employed by the Grand Junction Mining & Fuel Company at the Cameo mine, Mesa county, came to his death by a premature shot. It appears that the men employed in the narrow workings were permitted to do their own shooting. Deceased and his partner had drilled three holes, tamped and fired them. The last shot was slow in taking and while deceased waited a moment, the first two shots went off and buried him under a fall of coal. The accident happened at the noon hour and the company is responsible for it, as it is a violation of the coal mining law to allow shooting at the noon hour.

May 5—The following ten men lost their lives in a gas and dust explosion at the Southwestern mine, operated by the Rocky Mountain Fuel Company at Aguilar, Las Animas county:

(23)—LUKE LUCERO, Mexican, pick miner, experience six years, age 26 years, single.

(24)—RAY GALLEGOS, Mexican, pick miner, experience two years, age 25 years, married, two children.

(25)—ALEX JOHNSON, Swede, pick miner, experience 18 years, age 46 years, single.

(26)—CANDELARIO TRUJILLO, Mexican, pick miner, experience 20 years, age 48 years, married, three children.

(27)—P. F. McKENNA, American, pick miner, experience 5 months, age 41 years, married, three children.

(28)—JOHN SOUPAGIANES, Greek, pick miner, experience 15 years, age 36 years, married, no children.

(29)—CHRIS KATSICIS, Greek, pick miner, experience 20 years, age 36 years, no children.

(30)—JOHN KONESTRATES, Greek, pick miner, experience 30 years, age 48 years, married, two children.

(31)—LEON CORDOVA, Mexican, pick miner, experience 30 years, age 42 years, married, seven children.

(32)—TONY ROZMAN, Austrian, company man, experience 12 years, age 37 years, single.

See report on page 71.

(33)—May 21—MIKE CHTELOUGU, Rumanian, pick miner, experience ten years, age 45 years, married, two children, employed by the Moffat Coal Company at the Oak Hills No. 2 mine, Routt county, was killed by a fall of top coal. Deceased was working in a pillar room where there was some overhanging top coal which he tried to pull down and failed. He started to load coal under it and while thus engaged, a large piece fell on him, killing him instantly. It is possible that the accident might have been avoided had deceased put up some props before starting to work.

(34)—May 25—JOHN YAUK, Austrian, pick miner, experience 11 years, age 29 years, married, three children, employed by the Colorado Fuel & Iron Company at the Morley mine, Las Animas county, was killed by a fall of rock. Deceased and four other men were drawing room stumps and had holed through to an entry when a rock was released which struck Yauk. The place was well timbered and the accident was unforeseen and therefore is classed as "unavoidable."

(35)—June 23—ROGER SMITH, American, pick miner, experience eight years, age 37 years, married, one child, employed by the Rapini Bros. at the Placita mine, Pitkin county, came to his death by a gas explosion. Deceased was driving a cross cut when he encountered a body of gas that put his safety lamp out. Probably not knowing much about gas in a mine, he opened his lamp to relight it and ignited the gas. The accident is charged to the mine management in not furnishing a magnetically locked lamp and failure to provide sufficient ventilation at the face of the workings to remove the accumulation of gas.

(36)—July 7—DAN PEFFER, Italian, pick miner, experience 17 years, age 44 years, single, employed by the Mutual Coal Company at the Mutual mine, Huerfano county, was killed by a fall or rock. Deceased had been extracting chain pillars and had started to leave the mine. When he reached a point on the entry about 225 feet from his working face, a large rock fell from the roof and caught him. This was a case where, had the roof been supported by cross bars, the accident might have been avoided.

(37)—July 7—RICHARD E. YOUNG, Colored, pick miner, experience 11 years, age 48 years, married, no children, employed by the Colorado Fuel & Iron Company at the Robinson No. 2

mine, Huerfano county, was killed by a fall of rock. Deceased was engaged drawing a pillar and hauled his own coal. He had loaded a car and went to the entry to get the mule to pull his car. In some way, two props set a foot and one-half from the side of the track, were dislodged and a rock came down on him and the mule, killing both. The accident was a misadventure and is classed "unavoidable."

(38)—July 10—TONY NERONI, Italian, pick miner, experience nine years, age 38 years, married, no children, employed by the Colorado Fuel & Iron Company at the Frederick mine, Las Animas county, was killed by a fall of coal. Deceased and his partner were engaged grading for a switch at the entrance to a pillar. According to statement of the mine foreman, props had been ordered set at the entrance. The men were doing company work at the time and neglected to set the props. When the grading was finished an empty car was switched into the pillar and a rock gave way, striking deceased. The partner stated that they thought the roof was in good condition. However, had props been set, probably the accident would have been avoided.

(39)—July 11—JOSE NAVA, Mexican, machine miner, experience 8 years, age 32 years, single, employed by the Victor-American Fuel Company at the Cass mine, Las Animas county, was killed by a fall of rock. Deceased and his partner had finished loading a car, the former began to set a prop under some drawslate off which the coal had been mined. While thus engaged a piece of the drawslate snapped off and fell on deceased. The accident was unforeseen and is classed as "unavoidable."

(40)—July 12—ANDREW KIREN, Austrian, pick miner, experience 29 years, age 57 years, single, employed by the Colorado Fuel & Iron Company at the Rockvale mine, was killed by a premature shot. The investigation showed that the coal had been shot with giant powder by the use of a short fuse, also the tamping bar found in the hole shot was of iron tipped with copper. The evidence showed that deceased was in the habit of shooting with permissible powder, using a very short fuse. Probably the shot went off before he could get away. The fact that he used a short fuse and also an iron bar would indicate that he was very careless. Therefore, the accident is charged to his own carelessness and to the mine foreman who failed to make him comply with the requirements of the law when tamping and firing his shots.

(41)—July 12—SAMUEL G. HAIG, English, pick miner, experience 28 years, age 42 years, married, three children, employed by the American Smelting & Refining Company at the Boncarbo mine, Las Animas county, was killed by a fall of rock. Deceased and son were drawing a pillar when without warning a rock gave way which fell on the former. The place was well timbered and the accident is classed as "unavoidable."

(42)—July 25—PETER DUHICK, Slavonian, pick miner, experience ten years, age 31 years, single, employed by the Oakdale Coal Company at the Oakdale mine, Huerfano county, was injured on July 23rd, by a fall of rock and died on the above date. Deceased had finished his day's work and was on his way out of the mine. When he arrived at the intersection of the main motor road and the 6th N. entry, he was struck by a large rock which fell from the roof. The accident was unforeseen. It is possible that it might have been avoided had an examination been made of the place shortly before it happened. The accident is classed as "unavoidable."

(43)—July 31—JIM DISPENZA, Italian, pick miner, experience 20 years, age 42 years, single, employed by Caddell & Son at the Hezron No. 3 mine, Huerfano county, was killed by a fall of rock. Deceased was working single in a pillar and was found dead under a large rock. It appears that invisible slips had formed a pot and as the coal was removed, it gave way and fell on deceased. The place was well timbered and as the accident was unforseen, no one is charged with its responsibility.

(44)—August 11—ELESEO DALLE NORARE, Italian, pick miner, experience eight months, age 22 years, single, employed by the Rugby Collieries Company at the Rugby mine, Huerfano county, was killed by a fall of rock. Deceased was working alone in a gob entry which was well timbered. Apparently he was taking out coal between the gob corner and the roadway face when he struck an invisible slip which gave way, throwing out the props that were supporting it, and let the rock fall on him. The accident was unforseen and the responsibility for it is not charged to anyone. On the day of the accident flood waters came down the canyon and flooded the mine to such an extent that it was impossible to investigate the above accident until September 28, 1923.

(45)—August 16—VICTOR BRADY, Hungarian, pick miner, experience 20 years, age 34 years, married, two children, employed by the Keystone mine, El Paso county, was crushed to death between a car and roof. Deceased was taking a loaded car to the parting and apparently was riding the front end of the car when his head struck against the roof and knocked out his brains. The accident was a mischance and unavoidable.

(46)—August 21—DOMINGO SANCHEZ, Mexican, machine miner, experience seven years, age 39 years, married, one child, employed by the Temple Fuel Company at the Brodhead No. 9 mine, Las Animas county, came to his death by electrocution. Deceased was shoveling coal when he lost his footing and fell coming into contact with a live feed wire at a spot where the insulation was worn off. The wire was covered with coal dust and the bare spot was not noticeable. The accident was a misadventure on the part of the deceased, but probably would have been avoided had the wire been examined and properly been taken care of.

(47)—August 23—SAMUEL MIRANDA, Italian, machine miner, experience 12 years, age 36 years, married, three children, employed by the Colorado Fuel & Iron Company, at the Sopris mine, Las Animas county, came to his death by electrocution. Deceased was drilling holes preparatory to having his place. cut. He was seated directly under the feed lines, his head about eight inches away from the lower wire. In some way he came in contact with it and received a shock which killed him instantly. The feed wire was well insulated but very wet. There was no eye witness to the accident and it is classed as unforeseen and unavoidable.

(48)—August 25—W. B. HILL, American, shotfirer, experience 25 years, age 46 years, married, two children, employed by the Colorado & Utah Coal Company at the Harris mine, Routt county, was injured by coal blowing out against him, on April 24th, and died on the above date. Deceased was found nearly dead seven hours after the accident occurred. He was caught by one of three shots that he had fired in the place where he was found. Just what happened is not known. One of the three shots possibly had a defective fuse and hung fire for sometime and he returned thinking that there was a missed shot, or he believed that all shots were fired and he went back for the final examination of the place, and was caught by an outburst of coal from one of the shots. He sustained severe injuries and lingered a long time. Not having seen the place immediately after the accident, it is not possible to place the responsibility for it at this late date. However, the mine officials deserve censure for overlooking the fact that deceased did not come out of the mine at his usual hour, and in consequence the injured man was left lying neglected for seven hours.

(49)—September 6—JESUS LOPEZ, Mexican, pick miner, experience six years, age 21 years, married, one child, employed by the Colorado Fuel & Iron Company at the Lester mine, Huerfano county, was injured March 31, 1923, by a fall of rock and died six months later. Deceased was setting a prop under a roof which had been discovered unsafe, when a piece of rock gave way from a slip, striking him and injuring his spine so seriously that he died as above stated. He was a dependable worker and the accident was unavoidable.

(50)—September 7—JOSEPH GRANTHAN, American, pick miner, experience 47 years, age 56 years, married, two children, employed by the American Smelting & Refining Company at the San Juan mine, La Plata county, was killed by a fall or rock in a dip entry. Deceased was building a rock stopping in a cross cut when the accident occurred. He had been advised that the roof was loose and to put up props. He failed to comply and consequently the accident is charged to his own negligence.

(51)—September 18—OSCAR ROYCE, American, dumper, very little experience, age 17 years, employed by the Crested Butte Anthracite M. Company at the Smith-Anthracite mine, Gunnison county, came to his death by falling down the chute. Deceased got into the chute to dislodge some coal that clogged the passage. The coal broke loose and caught him, carrying him down to the bin. His injuries were so severe that death was almost instantaneous. The accident could have been avoided by using precaution, but the youth and inexperience of deceased makes it impossible to place the blame on him.

(52)—October 5—W. R. BOELZ, American, driller, experience in coal mines a few months, age 23 years, single, employed by the Alamo Coal Company at the Alamo mine, Huerfano county, was killed by being caught between dump car and roof. Deceased had signalled engineer to hoist men on two dump cars. He was on the front end of the second car from which a pin, used to prevent car from tipping, fell out unnoticed. As there was no counter balance to hold the car down it tipped, lifting deceased up and crushing him between the uplifted end of the car and the cross bars, causing such injuries that he died a few hours later. The accident was a misadventure and unavoidable.

(53)—Dctober 5—JOE PALLAZZO, Italian, pick miner, experience one year, age 35 years, married, one child, employed by the Colorado Fuel & Iron Company at the Frederick mine, Las Animas county, was killed by a fall of rock. Deceased and his partner were working in a cross cut on a chain pillar when a rock gave way from an invisible slip, throwing out 16 props and struck the former before he could get away in time. The place was well timbered and the accident was unforeseen and is classed as unavoidable.

(54)—October 7—ROBERT T. SCOTT, American, manager, experience 40 years, age 50, married, five children, part owner of the Midwest Coal Company, and acting also as mine foreman in the Midwest mine, together with

(55)—J. K. KEYS, American, machine miner, experience 30 years, age 56 years, married, seven children;

(56)—W. B. KEYS, American, machine miner, experience 18 years, age 31 years, married, three children;

(57)—ROBERT B. KEYS, American, machine miner, experience 13 years, age 29 years, married, one child;

(58)—HARVEY KEYS, American, machine miner, experience none, age 16 years, the latter three, sons of J. K. Keys, and

(59)—GEO. McKEE, American, machine miner, experience 5 years, age 33 years, single; were killed by a gas and dust explosion caused by an open light. See report on page 75.

(60)—October 8—DANIEL MARTINEZ, Mexican, pick miner, experience 17 years, age 52 years, married, four children, employed by the Cuchara Canon Coal Company at the Cuchara Canon mine, Huerfano county, was killed by a fall of rock. Deceased was drilling a hole to shoot coal off the solid. Between the coal and solid top was a band of drawslate about eight inches thick, which was usually taken down. In this instance a piece was left standing and two props were set under it to hold it up, but were removed when deceased set the machine post to drill the hole. While in the act of taking out the drill post the rock came down, striking deceased. The accident would have been avoided had the rock been taken down, and was the result of an error of judgment on part of the deceased.

(61)—November 5—MAX J. MARTINEZ, American, pick miner, experience five years, age 21 years, married, two children, employed by the American Smelting & Refining Company at the Boncarbo mine, Las Animas county, was killed by a fall of rock. According to evidence the pillar boss had instructed deceased and his partner to timber the place before starting to work, which order was neglected. While taking loose coal off a pillar a rock gave way from an invisible slip and struck deceased. The pillar boss is responsible for the accident in not seeing that his instructions are carried out.

(62)—November 15—WALTER ZINKO, Russian, machine contractor, experience ten years, age 39 years, married, three children, employed by the Colorado Fuel & Iron Company at the Robinson No. 2 mine, Huerfano county, was killed by a fall of rock. While setting a jack the cutting machine was accidently moved about ten inches, which stretched the cable and caused the jack pipe to slip, knocking out a cross bar supporting a rock, which fell on deceased and killed him. The accident was a mishap and no one is held accountable for it.

(63)—November 9—JOHN SOMAK, Austrian, miner, experience 22 years, age 51 years, married, five children, employed by the Colorado Fuel & Iron Company at the Crested Butte mine, Gunnison county, came to his death by falling off a ladder. Somak and his partner were setting a prop at the working face, the former was at the top of the ladder and in descending made a misstep and lost his balance, falling backwards on his head and breaking his neck. The accident was a misadventure and is classed as "unavoidable."

(63)—November 17—GEORGE TSAKAS, Greek, machine miner, experience one year, age 32 years, married, no children, employed by the Victor-American Fuel Company at the Cass mine, Las Animas county, was injured on October 11th, by a fall of rock from the effects of which he died on the above date. Deceased was in the act of putting up a cross bar when a rock came down and struck him. The place was well timbered and the accident was due to the inherent danger of the work.

(65)—December 1—J. P. SEBBEN, Italian, machine runner, experience 23 years, age 43 years, married, five children, employed by the Colorado Fuel & Iron Company at the Sopris mine, Las Animas county, was injured August 24, 1923, by a loaded car and died on the above date. Deceased had been cutting coal and was in the act of dropping three loaded cars into the entry, when the fourth car started to move before he was ready for it and struck him on his right leg causing a serious injury and resulting in erysipelas, from the effects of which he died four months later. It appears a brake had not been set on the fourth car when the other three were being dropped. Had this been done it is possible the accident would have been avoided.

(66)—December 31—LARIMER A. FERRIS, American, mule driver, experience seven years, age 42 years, married, two children, employed by the Fort Lupton Coal Company at the Witherbee mine, Weld county, was crushed to death between a moving car and a prop set against the side of a haulage road. Deceased was driving down a slant entry and in passing under two canvas curtains, his light went out and he lost his balance and fell off his seat sideways. The clearance between the car and the rib was only 11 inches, consequently there was no escape for deceased. The mine management is held responsible for the accident in not complying with the law which requires that a clearance of 2½ feet be maintained from side of the car to the rib.

MINE OFFICIALS' EXAMINATION

On October 31st, November 1st and 2nd, 1923, an examination was held in the House of Representatives, State Capitol Building, Denver, Colorado, for Coal Mine Officials; 254 candidates appeared for the examination, with the following results:

90 or 35% received First Class Mine Foreman's Certificates.

27 or 11% received Assistant First Class Mine Foreman's Certificates.

33 or 13% received Fire Boss Certificates.

49 or 19% received Second Class Mine Foreman's Certificates.

10 or 4% failed to receive better certificates than they were holding.

46 or 18% failed to pass the examination.

Following is a list of the successful candidates who received Certificates at the above examination:

First Class Mine Foreman

Cert. No.		
164	Allen, Lou M.	Delagua, Colo.
172	Anslow, B. Hawley	Berwind, Colo.
167	Barclay, Samuel M.	Forbes, Colo.
204	Bell, R. O.	Strong, Colo.
103	Bennett, Harry S.	Box 115, Colorado Springs, Colo.
251	Bennett, James	Pallos, Colo.
76	Biggins, G., Jr.	Box 157, Arvada, Colo.
24	Binks, Joe	Louisville, Colo.
18	Bracken, Dan	New Castle, Colo.
210	Bunten, Robert J.	Canon City, Colo.
197	Burns, Owen M.	Rouse, Colo.
45	Calderhead, J. M.	Cameo, Colo.
179	Carruthers, Thomas	Serene, Colo.
61	Coles, W. E.	Glenwood Springs, Colo.
195	Cunico, Nello Crist	Sopris, Colo.
111	Dalrymple, David	Chandler, Colo.
110	Dalrymple, George C.	Denver, Colo.
77	Dalrymple, Henry D.	Denver, Colo.
195½	Davenport, William A.	Serene, Colo.
212	Davies, Dan A.	Oak Creek, Colo.
58	Dawe, Sidney E.	Sopris, Colo.
85	Donnell, James O.	Brodhead, Colo.
198	Ellington, William	Tollerburg, Colo.
139	Evans, Griff I.	Pictou, Colo.
149	Evans, Wm. B.	Walsen, Colo.
120	Fairhurst, Wm.	Glenwood Springs, Colo.

Cert. No.		
9	Fernandez, J. C.	Tollerburg, Colo.
151	French, A. P.	Toltec, Colo.
178	Friel, Edward	Oakview, Colo.
155	Gabaldon, Carl E.	Berwind, Colo.
244	Gay, James Gough	Coal Creek, Colo.
69	Glover, Arthur	Erie, Colo.
196	Gray, John	Erie, Colo.
140	Gravelle, Ivor	Pictou, Colo.
144	Gregory, George	Walsenburg, Colo.
36	Gregory, Thomas A.	Tabasco, Colo.
82	Hale, J. R.	Walsen, Colo.
176	Hamilton, James	Oakview, Colo.
71	Happs, George	Ravenwood, Colo.
60	Hicks, C. F.	Mt. Harris, Colo.
104	Hobbs, Milton	Lester, Colo.
157	Howells, Edwin	Colorado Springs, Colo.
202	Jordan, James	Denver, Colo.
201	Jordan, Patt	Frederick, Colo.
56	Johnson, Geo. O.	Chandler, Colo
218	Jones, Robert	Superior, Colo.
225	Kareich, Walter	Segundo, Colo.
136	Kelly, James B.	Delagua, Colo.
148	Kerr, John Wm.	Louisville, Colo.
23	Lamb, Adam	Dacono, Colo.
17	Lamb, George	Dacono, Colo.
19	Lindsay, James	Frederick, Colo.
102	Lowe, Alex M.	Lester, Colo.
94	Lloyd, William	Aguilar, Colo.
63	Machin, Eugene William	Louisville, Colo.
220	McCune, James A.	Rouse, Colo.
59	McCune, Joseph W.	Mt. Harris, Colo.
93	Merritt, William A.	Walsenburg, Colo.
22	Morgan, John D.	Louisville, Colo.
189	Morton, R. S.	Denver, Colo.
170	Mosier, MacIntosh Peter	Pyrolite, Colo.
75	Moxley, George W.	Solar, Colo.
187	Murphy, Edward K.	Pikeview, Colo.
234	Neish, John G.	Farr, Colo.
73	Oakley, Edwin	Erie, Colo.
123	Pickens, Chas.	Oakview, Colo.
257	Prendergast, Richard	Glenwood Springs, Colo.
147	Ransone, Foster	Coal Creek, Colo.
181	Rees, G. H.	Lafayette, Colo.
96	Reynolds, Thos.	Aguilar, Colo.
231	Richards, Evan	Tabasco, Colo.
191	Salvage, James M.	Louisville, Colo.
122	Scott, Walter	Palisade, Colo.
128	Smith, Albert G.	Delagua, Colo.

Cert. No.		
14	Smith,, John	Morley, Colo.
237	Sutherland, Harold A.	Farr, Colo.
53	Sneddon, Robert	Canon City, Colo.
247	Unwin, Henry Ralph	Serene, Colo.
66	Vahldick, Harold W.	Coal Creek, Colo.
211	Vickers, James W.	Rugby, Colo.
222	Voss, Joe P.	Valdez, Colo.
173	Titsworth, Geo. H.	Valdez, Colo.
193	Treasure, Arthur	Morley, Colo.
112	Twadell, James J.	Aguilar, Colo.
152	Welch, R. H.	Mt. Harris, Colo.
156	Williams, Ellis H.	Berwind, Colo.
192	Williams, John T.	Sopris, Colo.
133	Williams, Richard	Walsen, Colo.
81	Wilson, James H.	Trinidad, Colo.
141	Wilson, William	Coal Creek, Colo.

First Class Assistant Mine Foreman

2	Bludworth, Robinson E.	Tabasco, Colo.
174	Bryan, Thos.	Valdez, Colo.
95	Chatin, August H.	Walsenburg, Colo.
15	Clemens, R. C.	Ravenwood, Colo.
8	Cornali, John	Tollerburg, Colo.
67	Cowperthwaite, Ray B.	Coal Creek, Colo.
42	Davis, William J.	Ideal, Colo.
185	Daugherty, W. F.	Morley, Colo.
105	Edwards, Owen	Cokedale, Colo.
119	Giovanini, Antone B.	Mt. Harris, Colo.
246	Godfrey, Glen Herbert	Florence, Colo.
127	Halbert, William C.	Tioga, Colo.
221	Herd, James	Valdez, Colo.
175	Kilpatrick, John	Forbes, Colo.
107	Laiminger, Korbin E.	Sopris, Colo.
242	Langowski, Alexander	Sopris, Colo.
232	Langowski, Charles	Sopris, Colo.
1	Lynch, Hugh B.	Walsen, Colo.
98	Meden, Louis	Lafayette, Colo.
233	Morgan, A. W.	Forbes, Colo.
74	Ortiz, J. E.	Chandler, Colo.
10	Potter, Parley	Florence, Colo.
163	Ranson, Raymond C.	Pyrolite. Colo.
84	Regner, Martin J.	Walsen, Colo.
26	Rockley, Newton E.	Louisville, Colo.
65	Roddy, John J.	Palisade, Colo.
106	Scott, Harold E.	Ludlow, Colo.

Fire Boss Certificates

Cert. No.		
158	Bickerton, Joseph R.	Aguilar, Colo.
35	Boyle, Robert J.	Leyden, Colo.
16	Cadez, John	Ravenwood, Colo.
184	Chase, Newton J.	Ravenwood, Colo.
200	Chase, W. A.	Rouse, Colo.
54	Dawe, Clifford	Valdez, Colo.
241	Coperthwaite, Leslie W.	Coal Creek, Colo.
31	Fennell, Wesley	Colorado Springs, Colo.
114	Garcia, Rudolph	Cokedale, Colo.
20	Gimpel, Joe	South Canon, Colo.
88	Hartman, Bart	Lafayette, Colo.
43	Hearn, William E.	Cameo, Colo.
153	Hunden, Dave	Florence, Colo.
115	McIllwee, James P.	Aguilar, Colo.
83	Jacobs, Edward	Aguilar, Colo.
12	Jenkins, Edward H.	Walsen, Colo.
51	Keller, C. J.	Primero, Colo.
32	Kish, Louis D.	Primero, Colo.
78	Landen, W. E.	Chandler, Colo.
46	Lloyd, Stanley J.	Erie, Colo.
80	Luh, Frank	Camp Shumway, Colo.
41	Miggison, Earl	Berwind, Colo.
64	Neish, Geo.	McGregor, Colo.
87	Neish, W. H.	McGregor, Colo.
243	Penny, Jesse	Rockvale, Colo.
79	Peet, Charles	Walsen, Colo.
146	Renfro, Wm. E.	Canon City, Colo.
168	Richards, W. H.	Delagua, Colo.
183	Savio, Gaetano	Sopris, Colo.
239	Smith, Matthew	Rockvale, Colo.
109	Twadell, Mike D.	Aguilar, Colo.
33	Williams, William	Aguilar, Colo.
34	Woodword, Francis S.	Aguilar, Colo.

Second Class Mine Foreman

177	Banecks, Kent N.	Brodhead, Colo.
137	Barnett, Simon	Denver, Colo.
213	Bessol, Fred	Boulder, Colo.
154	Clayton, Robert	Denver, Colo.
135	Cameron, James R.	Delcarbon, Colo.
206	Caminotti, William J.	Rugby, Colo.
235	Cartwright, Percy	Brodhead, Colo.
55	Davenport, C. Lynn	Glenwood Springs, Colo.
150	Easton, William John	Berwind, Colo.
68	Falgien, Alex	Coal Creek, Colo.
28	Ferguson, William	Colorado Springs, Colo.

Cert. No.		
145	Foreman, F. B.	Erie, Colo.
256	Green, James R.	Dacono, Colo.
116	Green, Maynard	Fort Lupton, Colo.
228	Hambly, Edward G.	Oak Creek, Colo.
131	Hamby, Isaac N.	Palisade, Colo.
130	Haynes, Arthur Edwin	Oak Creek, Colo.
250	Hicks, Carl	Palisade, Colo.
21	Hodgson, Lew L.	Firestone, Colo.
205	Kerr, James J.	Superior, Colo.
27	La Plante, F. R.	Oak Creek, Colo.
99	Lemberg, Joseph	Lafayette, Colo.
143	Lloyd, John G.	Walsen, Colo.
30	Lueras, David C.	Serene, Colo.
7	Mattew, D. Graham	Florence, Colo.
4	Maxwell, J. D.	Mt. Harris, Colo.
254	McCurdy, W. B.	Oak Creek, Colo.
138	McDowell, John	Palisade, Colo.
124	McIntyre, William Donald	Oak Creek, Colo.
37	McKeown, John	Berwind, Colo.
72	McManus, Thos. F.	Chandler, Colo.
233	Mishork, Walter	Oak Creek, Colo.
40	Mortensen, Peter	Colorado Springs, Colo.
209	Moschetti, Dan	Canon City, Colo.
219	Olsen, J. J.	Durango, Colo.
214	Parkin, Alfred E.	Superior, Colo.
180	Piano, John	Brodhead, Colo.
166	Pierce, Robert A.	Denver, Colo.
188	Quesnoy, H. J.	Aguilar, Colo.
86	Sherratt, Harry	Lafayette, Colo.
3	Smith, Lee H.	Mt. Harris, Colo.
161	Smith, Reid R.	Bear River, Colo.
129	Smith, William	Cokedale, Colo.
29	Vallely, John	Oak Creek, Colo.
142	Whalen, James H.	Trinidad, Colo.
126	Williams, Harold T.	Oak Creek, Colo.
117	Williams, J.	Boulder, Colo.
199	Williams, Lewis	Rouse, Colo.
132	Williams, Myron D.	Oak Creek, Colo.